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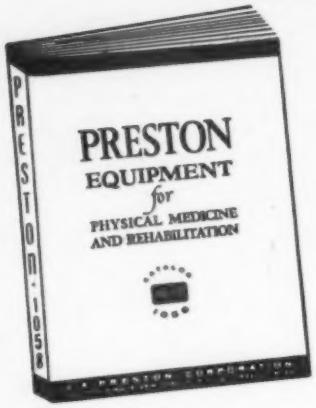

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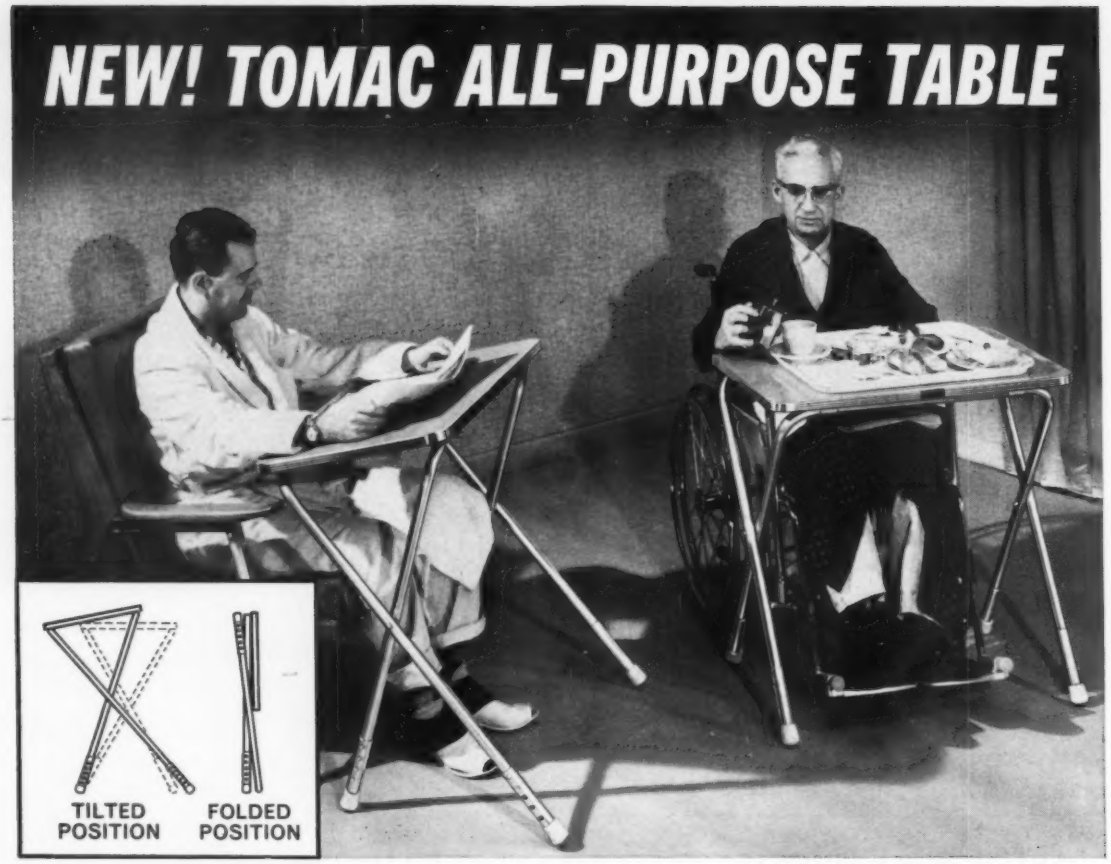

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ARTICLES

On-Going Research in a Neuropsychiatric Hospital — Delilah Riemer, M.D. 41

A Survey of the Educational and Professional Backgrounds of Active Members of the Association for Physical and Mental Rehabilitation — Paul F. Fleer, M.A. 44

A Tetraplegic Artist — Ernst Jokl, M.D., Herta Lange Cosack, M.D. and Dolores Little 47

Physical Fitness Index in Psychiatric Patients — Harry T. Zankel, M.D. and James M. Field, B.S. 50

Social Aspects in the Rehabilitation of the Physically Handicapped — Herbert Bernstein 52

Corrective Therapy for the Disturbed Patient — Richard G. Singer, M.D. and Sam Boruchov, M.A. 56

DEPARTMENTS

FROM OTHER JOURNALS 64

CHAPTERS 65

BOOK REVIEWS 65

NEWS AND COMMENTS 67

CLASSIFIED DIRECTORY ..... Back Cover

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ON-GOING RESEARCH IN A NEUROPSYCHIATRIC HOSPITAL*

DELILAH RIEMER, M.D.**

Physical medicine and rehabilitation activities have always played a prominent role in the treatment and management of the psychiatric patient. The historical record since antiquity reveals that patients have been encouraged to do some form of work and that the general opinion has been that work benefits the patient. However, during the last decade attempts have been made to more rigorously evaluate the benefits derived from physical medicine and rehabilitation activities. Yet, research in the psychiatric hospital in all aspects of patient care is difficult. Psychiatric evaluatives so far have been determined either subjectively or in terms of change in psychiatric status, such as transfer to a better ward, privilege status, being allowed to go on trial visit or discharge.

Difficulties in Psychiatric Research

It is important to try to analyze why research in general is difficult in a psychiatric hospital so that its pitfalls may be anticipated and attempts made to overcome them. In the first place, one deals with many simultaneous variables in the area of psychiatric research. Features which may influence the patient such as the environment or the milieu of the hospital, the interpersonal relationships of various personnel, the variety of programs offered the patient, the various types of treatment, individual, group psychotherapy, tranquilizing medication and other somatic forms of therapy are some of the factors whose effects are difficult to assess simultaneously. Furthermore, the results of any treatments in the psychiatric hospital are often intangible because we lack precise instruments for assessing patient change. Even the psychological tests or the rating scales often have subjective features. This is in contra-distinction to measuring improvement in physical disabilities, where so much more can be objective, definite and measurable.

An additional problem in psychiatric research stems from the fact that the patient becomes involved with personnel from many services, and it becomes difficult to delineate the individual effects of these services .The Committee on Psychopathology of the Group for the Advancement of Psychiatry probably present the most comprehensive statement on the handicaps in psychiatric research (1). The lack of personnel, lack of time, lack of funds, lack of training in research methodology, lack of rewards for research, and lack of administrative support are some of the factors listed in their report. These factors, plus all the ones discussed above encountered in the mental hospital setting, reveal the complexity that faces the prospective investigator. Yet, any reader of the history of science will recall that such a state of affairs is inherent to the early stages of knowledge building in any area. Rather than being discouraged by this situation the worker in this field should view this as an excellent opportunity to make a contribution.

Physical Medicine and Rehabilitation Research

Turning now to research in the physical medicine and rehabilitation service of a neuropsychiatric hospital, we are not surprised to find the same difficulties mentioned above since all research in a mental hospital, regardless of service, ultimately involves the psychiatric status of the patient. Before proceeding to delineate the particular difficulties in research of physical medicine and rehabilitation, let us broadly state the patient care objectives of such a service in a mental hospital. Once this is done we can more readily understand the rationale of the *research objectives* of such a service. Broadly speaking, the objectives of our service are to prevent further regression of the patient; to contribute to the reduction of his psychiatric symptomatology; and to provide the patient with attitudes and skills that will increase the likelihood of his successful post hospital adjustment. From these our research objectives become immediately clear. Briefly stated they are:

1. To what extent are we preventing further regression and what other procedures may be devised for this problem?
2. To what extent do our activities now contribute to the reduction of psychiatric symptomatology and what activities may be more effective in achieving these objectives?
3. Are the skills we are developing now likely to make for successful post hospital adjustment? What are other skills or combination of skills and attitudes which can more effectively achieve this objective?

---

*Delivered at Annual Tri-Organizational Clinical Conference, Ambassador Hotel, Atlantic City, New Jersey, July 25, 1958.

**Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Bedford, Mass.

Naturally enough, we are under the impression that physical medicine and rehabilitation activities do contribute to the three objectives mentioned above. However, it is our desire and interest to demonstrate objectively whether this is, or is not the case.

Returning to our analysis of research difficulties we recall that our major stumbling block to objective investigation is the problem of psychiatric evaluation. Changes in psychiatric status, even when assessed by the most objective tests and rating skills have a definite element of subjectivity. This being the case, results of treatment with physical medicine and rehabilitation activities are often difficult to evaluate. Accordingly, we have turned to such criteria as the granting of privileges, movement of patients to a better ward, trial visit status, or discharge from the hospital as standards, until more precise instruments of psychiatric change are developed. In our own service we use an additional criterion of psychiatric change, namely the patient's movement from a less difficult to a more difficult activities program. Naturally, this assumes a rationale for determining activity difficulty. Our criteria at this time for the degree of difficulty of an activity are: (a) the amount of responsibility the patient has to assume; (b) the amount of judgment and reasoning that is required; (c) the degree of individualized abilities required; and (d) the degree of attention span. This then, is where we now stand in the measurement and assessment of psychiatric change.

Motivation For Research

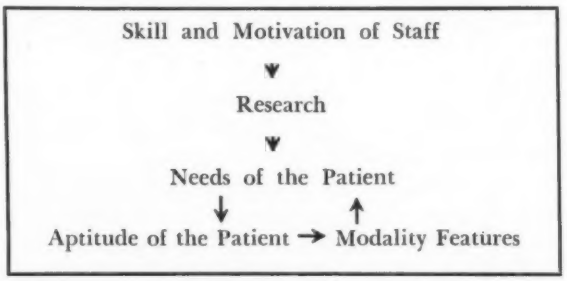
Before turning to what I regard as the three major dimensions of any research problem in a physical medicine and rehabilitation service of a neuropsychiatric hospital, let us first examine an important requisite for the accomplishment of research, namely, the motivation and skills of the staff to do research.

If the staff is motivated to ask fundamental questions about its accomplishments with patients, this meets an important requisite for research. From time to time it must stand aside and be curious and questioning as to the use and value of its particular modalities. Workers must have an intellectual desire to learn all they can about the relationship of their modalities to change in psychiatric status. The staff should not be discouraged by personnel of other services who may not be similarly motivated, who may have a "do-nothing" attitude stemming from a feeling of "why bother to try to solve these problems which are so involved and complex." The importance of acquiring skills in research methodology cannot be over-emphasized. Such skills not only equip the investigator for the conduct of research, but also serve to maintain his motivation against the negative or indifferent reactions of other personnel and obstacles in research itself. In our hospital, over the past four or five years, we have had informal methodology by our research consultant, Dr. Leo J. Reyna, and in the Fall he will give our service a series of twelve formal lectures as part of our physical medicine and rehabilitation in-service training program.

It has been our experience that motivation for research can be more readily stimulated and maintained if the questions that are investigated have immediate application and will be useful either in determining improvement, evaluating an activity, or relating objectively the results of an activity to changes in psychiatric status of the patient.

Three Major Dimensions of Research

Once the staff is interested in doing research and has chosen various problems to investigate, I believe that we can distinguish three major dimensions which characterize every problem in physical medicine and rehabilitation service research in a mental hospital setting. Briefly these are: first, the needs of the patient; second, the aptitude and skills of the patient; and third, the features of the modality. Thus, the total research enterprise can be seen as being initiated by the motivation and skills of the staff for discovery of what modalities can best meet the particular needs of the patient. In accomplishing this we must first of all be able to delineate clearly what the needs of the patient are; secondly, what his aptitudes and skills are at the moment; and thirdly, what features of which modalities lend themselves to the needs of the particular patient. Diagramatically this total situation can be represented in this way:



Now let us briefly expand on each of the three dimensions, one or more of which may be the target for a research project.

First of all, it appears meaningful to distinguish between immediate and long term needs of the patient. This will obviously determine, in part, the nature of the research problem, as well as the areas to

be studied. By immediate needs I refer to relief or reduction of psychiatric symptoms; long term needs involve the development of skills and attitudes for hospital and/or post-hospital adjustments.

Of particular interest in recent years has been the second research dimension, namely, the question of the suitability of the patient for various modalities. We feel that a patient must have the aptitudes and skills for a particular activity, otherwise his participation will result in frustration rather than relief of symptoms. Thus there is a need for the broader utilization of tests to supplement clinical judgment in assessing the aptitudes and skills of the patient. However, the meaning of such aptitude and skill assessments will depend on our knowledge of (a) what modalities will meet particular patient needs, and (b) what aptitudes and skills are required by these modalities.

Two Research Projects in Progress

At Bedford VA Hospital, we have attempted to attack certain problems which we think are pertinent and basic to the above rationale. They are all attempts to evaluate what we are doing in physical medicine and rehabilitation and why. The first project deals with a study of the fundametal and universal need for physical fitness, whether it be for a psychiatric patient or the normal individual. We embarked on this project after questioning whether the level of physical fitness in the psychiatric patient would be the same or different than the normal population. To test this hypothesis a pilot study was conducted using a group of standardized tests that yielded a physical fitness score. Mr. Robert Hodgdon, corrective therapist, initiated the early phases of this project, and a report of his study will be published in the very near future.

Briefly, he administered the Rogers Physical Fitness Test battery to 42 schizophrenic male patients ranging from 18 to 40 years of age and hospitalized from three months to three years. Their scores varied from a Physical Fitness Index of 49 to a high of 140. However, there were only two patients whose scores were above the population norm of 100. The mean score for the 42 patients was 70.23, a difference from the population norm which was statistically significant. This study not only suggests that there may be a relationship between physical fitness and psychiatric status but also points out that a genuine need of such patients is the improvement of their physical fitness. Further work is now proceeding on a larger and more rigorous study since the Rogers Physical Fitness Test battery represents only one aspect of the broad meaning of physical fitness.

Whereas the above study was concerned with one of the needs of the patient, the second study I wish to report deals with an analysis of the patient aptitudes and skills demanded by the various modalities in occupational therapy. As noted earlier, the ability of the patient to profit from any modality depends on the relationship of his skills and aptitudes to those required by the modality. The problem of discovering what the aptitude and skill requirements of each modality are is certainly a complex one, but one that nevertheless must be solved for a meaningful and effective physical medicine prescription.

Certainly, some of the modality requirements are more readily detected than others. Skill and dexterity with one's fingers or hands may be easily assessed. However, there are other factors like the ability to perceive relationships and the ability for abstraction where tests are not readily available.

At the present time patients in a psychiatric hospital are very often assigned to occupational therapy on an empirical basis without any consideration of their aptitudes or requirements of the occupational therapy tasks. True, there are many tasks in occupational therapy which appear simple and not demanding of any particular skills. Yet, when we begin to consider higher level activities for the patient, we are not quite sure what such tasks require and whether the patient possesses the necessary skills and aptitudes to profit from such activities. In our own case, after becoming aware of the fact that different activities required different degrees of abstraction ability, we were led to investigate the extent to which this ability varied among patients and was involved in the different occupational therapy tasks. The interest of the occupational therapy staff was readily aroused and in turn led to cooperation of our psychology staff. Time does not permit me to further elaborate on this project, but you can readily see that such an investigation will have to be broken up into several phases and that the results of our efforts are not likely to be ready before two years.

It is apparent that the outcome of such a project will have implications for the feasibility of similar research in other modalities. Eventually we would like to be able to understand every need or the combination of needs that each patient has, the modalities which will most effectively meet these needs, and the abilities the patient must have for profitable assignment to the modality.

Summary

In summary, research in a physical medicine and rehabilitation service of a psychiatric hospital faces the same handicaps encountered by research in psy-

Cont'd on Page 51

A SURVEY OF THE EDUCATIONAL AND PROFESSIONAL BACKGROUNDS OF ACTIVE MEMBERS OF THE ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION**

PAUL F. FLEER, M.A.**

As an organization such as the Association for Physical and Mental Rehabilitation develops over the years, it is important that it always have on hand current data providing, among other things, a profile of the educational and professional growth of its membership. Such data is useful to the organization in several ways. First, it may indicate the direction of professional growth of its members; second, it may show the degree to which its members are seeking and using advanced training courses in special areas; third, it may reveal the sources of new members and their educational preparation; fourth, it may demonstrate the areas in which the members are being utilized; fifth, affiliations with other professional groups, and special interests of the members, may be noted. Finally, trends in educational development and professional growth may be revealed.

In addition to being useful to the Association and to its committees in carrying on and advancing its work and in understanding itself, these data are also valuable in presenting the organization to other professional groups and individuals. This is an area of immense importance.

The task of gathering this material is a continuing one since constant growth is a characteristic of any healthy organization. We have two very fine opportunities for obtaining much of the information regarding the educational preparation and professional experience of our new members—information gathered from applications for active membership in the APMR and from applications of corrective therapists for certification by the APMR. Data gathered here are basic and routine, and as you probably remember, quite extensive.

There are areas, however, not included in these forms which are nevertheless significant if a true profile of the membership is to be obtained. Information regarding further education in colleges, special training courses, in-service training programs, and the like infers much about the character of the organization and its members. This is true also of individuals' professional attainments. Periodic supplementary surveys of the members furnish a means of gathering this additional information.

Two such efforts have been made by the Association for Physical and Mental Rehabilitation. The first was an extremely successful survey made in 1952 by Louis F. Mantovano (1) which, incidentally, achieved an incredibly high percent of return. The second survey, which is the subject of this paper, was conducted by the Survey Committee at the request of Arthur Landy, then president of the Association.

Using Mr. Mantovano's survey as a pattern, this more recent effort sought to bring up to date and to extend the information obtained by the earlier survey, in order to determine the present educational and professional backgrounds of active members of the Association for Physical and Mental Rehabilitation.

The method used involved the construction of a questionnaire which was initially distributed to all members by way of a General Information Bulletin (April 3, 1957). All active members who did not respond to the initial distribution were sent a follow-up letter with enclosed questionnaire. The information from the returned questionnaires was then tabulated.

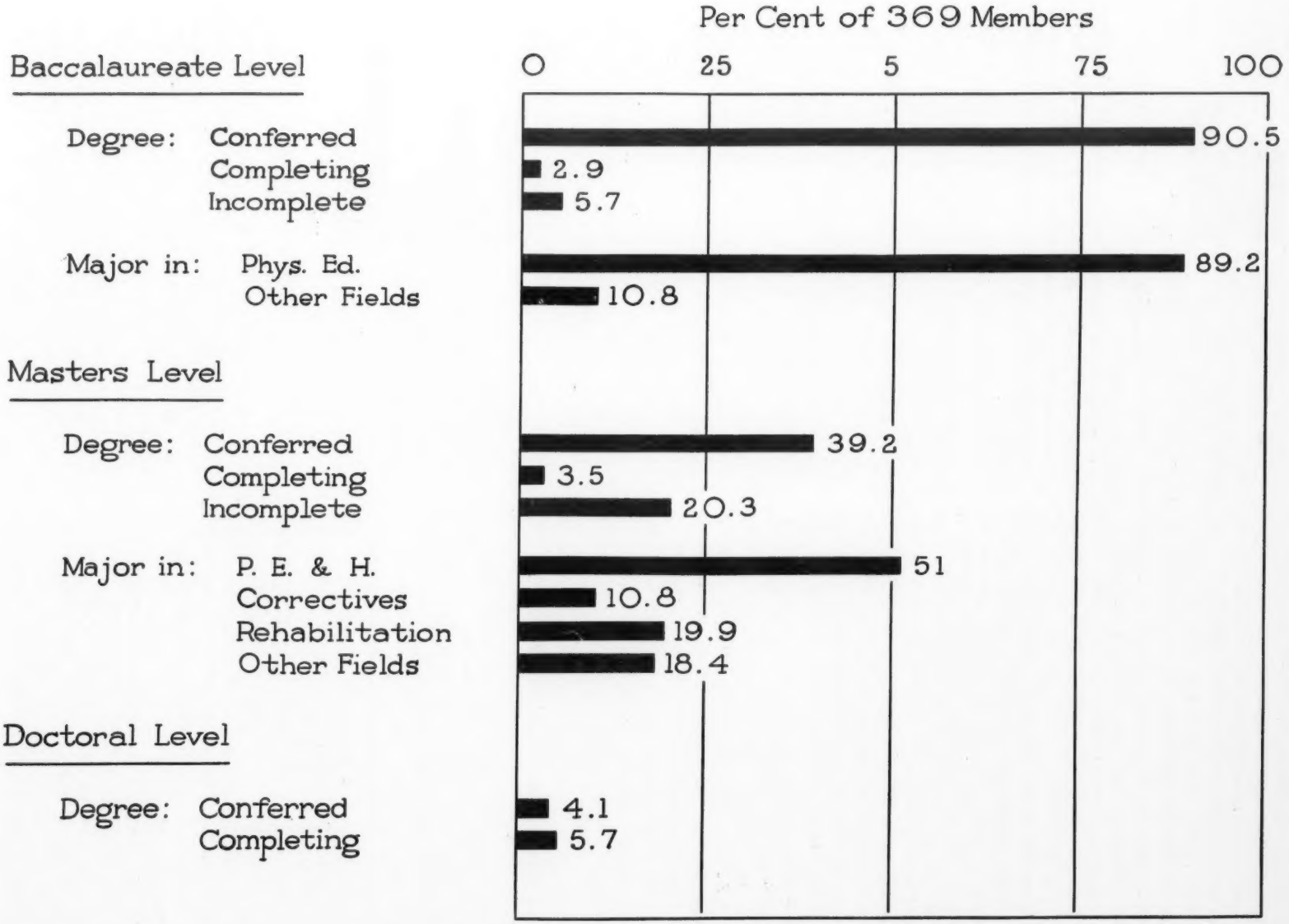
From the initial distribution of the questionnaire, 160 returns were received. 423 questionnaires were then sent to those who did not reply to the first, and an additional 209 returns were received. A total of 369 questionnaires, therefore, serves as the basis of the report which follows. This represents somewhat over 60% of the active members which is sufficient to provide a valid profile of the Association. Let me summarize the findings of this survey for you now.

The first one-third of the questionnaire dealt with education and sought to determine the level of scholastic attainment, the major areas of study, and the schools attended. Of the 369 returns, 334 or 90.5% have baccalaureate degrees, 145 or 39.2% have masters degrees, and 15 or 4.1% have doctoral degrees.

In breaking this down first on the baccalaureate level, we find that in addition to the 90.5% who have had degrees conferred, 2.9% are completing degree requirements, and 5.7% have not met degree require-

*Presented at Tri-Organizational Conference, Atlantic City, N. J., July 23, 1958.

**Crotched Mt. Rehabilitation Center, Peterborough, N. H.



Educational Attainment of 369 Active APMR Members

ments. 89.2% majored in physical education, and the remaining 10.8% received degrees in a wide variety of other fields most of which, however, were closely allied with education or one of the sciences.

These figures correspond with Mr. Mantovano's figures to within 1.5%, with the exception of the major area of study. Here about 5% fewer majored in physical education than was previously reported.

As for the schools attended, 148 different colleges were listed. Of these, 99 or 26.8% graduated from 6 or 4.1% of the schools.

Of the 369 returns, 233 or 63.1% have worked on the graduate level. 39.2% have had masters degrees conferred, 3.5% are completing degree requirements, and 20.3% have not met degree requirements. 196 of the 233 who have worked on the graduate level listed a major area of study. 51% majored in physical education and health, 10.8% majored in correctives, 19.9% majored in rehabilitation, and 18.4% majored in other areas. The other areas mentioned in this last group include psychology, special education, administration, and the social sciences.

A comparison with the 1952 study shows a 7.8% increase in those who have worked on the graduate level, a 2.3% increase in degrees conferred, an 8.6% decrease in those completing degree requirements, and a 14% increase in those who have not met degree requirements. Also there is a 19.3% decrease in those majoring in physical education and health on the graduate level with a concomitant increase in majors in rehabilitation and other areas.

Although it would be dangerous to try to draw conclusions from these data, a trend seems to be indicated toward more graduate study but without any immediate attempt on the part of many to earn a degree; and a trend toward work in areas other than physical education and health. A more careful scrutiny of the raw material would certainly seem worthwhile in this area.

As for the schools attended, 64 different colleges were listed. Again it is interesting to note that 42.9% of those who worked on the graduate level attended only 6.3% of the schools listed.

At the doctoral level, 15 or 4.1% have received degrees and 21 or 5.7% are completing degree requirements. One-third of these majored in physical education or recreation. This shows that almost one out of every ten members who replied to the questionnaire has worked on the doctoral level.

In addition to the foregoing, a considerable amount of other formal advanced study in a variety of areas was listed which, if included in the graduate level figure, would raise it to about 255 or 69%.

The second part of the questionnaire dealt with additional or specialized training in rehabilitation.

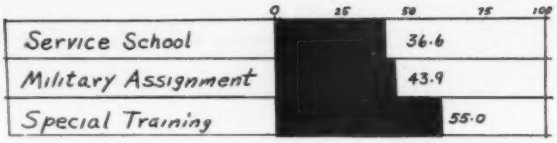


Fig. 2

Specialized Training in Rehabilitation

It asked about service school training in rehabilitation or physical reconditioning, military assignment in these areas, and it asked for a list of special courses or schools attended which were related to corrective therapy.

In regard to service school training, 135 or 36.6% of the total affirmed that they had had such training. 162 or 43.9% had military assignment in rehabilitation.

Perhaps the most astonishing fact revealed by this survey is that the active members of the Association for Physical and Mental Rehabilitation have engaged in a tremendous amount of specialized training in rehabilitation. 203 or 55% of the respondents listed special courses and schools which they have attended. This is a very conservative estimate. A perusal of the raw material reveals a very wide variety of courses, schools and clinics which have been attended by our members, covering a host of subjects, and lasting for from one week to four years. A true estimate, then, of the number who have participated in courses commensurate with the profession in service schools, VA schools, etc., would be over 90%.

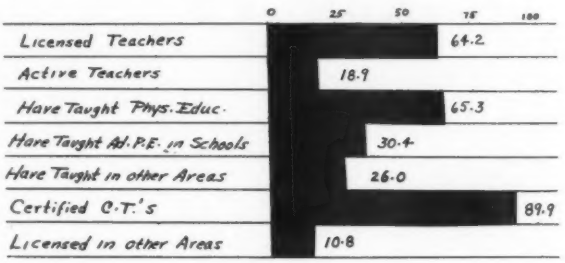


Fig. 3

Professional Experience

The third and final part of the questionnaire dealt with professional experience and sought information concerning teaching experience in schools, the practice of corrective therapy in hospitals or clinics, licenses, certifications or registrations which are held, and affiliations with other professional groups. A resume of this section is as follows:

1. 237 or 64.2% of the total are licensed teachers holding licenses in 44 States. 29.5% of these are pres-

Cont'd on Page 63

STUDIES IN CLINICAL PHYSIOLOGY OF EXERCISE. III

A TETRAPLEGIC ARTIST

(Case History, with Reference to the Problem of Mobilization of Latent Neuro-Motor Resources)

ERNST JOKL, M.D.*

HERTA LANGE-COSACK, M.D.**

DOLORES LITTLE***

The chief function of the nervous system is to send messages to the muscles which will make the body move effectively as a whole.

—*E. D. Adrian*

During the process of learning of skilled movements definite patterns or "habits" are established for any given motor act. In terms of neurophysiology, each pattern or habit of the kind under reference is 'new' in that it does not rely upon reflex action (2). It requires for its execution an original prototype of muscular integration.

Sherrington (1940) writes:

The reflex is independent of consciousness even at first occurrence. It does not emanate from the 'ego.' The reflex is innate and inherited. The acquisitions of habit present neither of these features. They are results of training. They are parts of education, whether formal or 'natural.'

In the majority of cases such patterns or habits will not be altered once they have been formed even though it is a fact that they become progressively more differentiated in the course of training. The neuromuscular prototype of every motor act is largely determined at the moment of the first choice of a pattern or a "habit," for better or for worse. For each motor act, a special prototype is "set."

Acquisition of a habit is specific and not 'transferable' beyond its application. It is ad hoc; a faithful servant in its place. It is for the master to assign to it with care its particular job, for it is unlikely that a job once assigned it, the master will ever himself do that job again. (Sherrington)

Resources and Abstraction

The clinical evidence which will be detailed in this paper emphasizes two points; first, the possibility of motor resources being present in latent form, resources at times so great as to be potentially decisive for the individual's future; second, the capacity of the human mind to abstract mental images and project them alternatively and vicariously through any part of the motor system available. As regards the latter problem, Adrian (1947) comments thus:

We may learn a skilled movement by employing certain muscles and therefore certain groups of nerve cells in the motor area of the brain; but when we have learnt it we can carry out the movement with an entirely different set of muscles and nerve-cells—we can write our name with a pencil held between the toes when we have learnt to do it with the fingers. We can draw a triangle small or large when we have once learned its shape.

But what about the *acquisition* of the ability to execute movements according to "new" mental images? Is this faculty bound to the integrity of regional assemblages of our physical frame, e.g. for writing, to the hands; for the formulation of words, to "the muscles of speech;" and for locomotion, to the lower extremities? After they are established, functional entities of the kind under analysis can be "shifted." So much we know. However, can the original establishment be accomplished *in absentia executoris naturalis?* It will be shown that the answer to this question is in the affirmative. The relevant evidence indicates the scope of validity of another statement by Adrian, viz:

the nervous system reacts to relations between stimuli and performs the appropriate task with any part of the motor system that is available. We cannot represent it as a series of machines for operating on the map of events unless we add a number of devices to make good this fundamental difference. On the sensory side there must be something to abstract the significant elements of a pattern, and on the motor side something to do just the reverse, to convert the abstraction into a concrete movement.

Case History

The 23 year old woman with whom the following report is concerned grew up under difficult home conditions. Her father is a war invalid incapable of earning a living. There was constant strife between him and his wife, a sickly woman over-loaded with work. With a brother, one year her junior, the patient is on good terms. She left school at age 14 to attend a vocational training course. Subsequently she had just been apprenticed to a goldsmith when she became afflicted with poliomyelitis. Paralysis of all limbs and body, including respiratory muscles ensued. For several weeks she lay in an iron lung.

Control over movements of the face was retained. The muscles of the neck were weakened, though after some time the head could again be balanced. No other effective motor function returned after the illness. Patient had to be fed and in every respect depended upon help.

When it was certain that an improvement of the tetraplegic state could no longer be expected, the girl went through a period of depression though even then she displayed a great deal of self-discipline. While much sympathy was shown towards her by everyone, her demands amounted

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*** University of Kentucky.

to little. She was very popular with everyone who met her at the hospital. Grateful for every suggestion for mental occupation, she soon learned to turn pages of a book with the help of a wooden stick held in the mouth. Towards the end of the first year following the poliomyelitic infection she began to paint in the same manner, and later also to write. She thereupon participated regularly in private instruction in drawing, painting and art history, under the tutelage of an understanding and competent teacher. Progress in her work was rapid. After three years of training a well known graphic art school accepted her as a student and arrangements were made for her to take up domicile in a hospital near the school. During the first week, a paid assistant transported her to and fro in a wheel chair. Soon however, she had gained the friendship of her fellow students to such an extent that many of them volunteered henceforth to take turns to do so themselves. Even when the class went for outings to draw or paint in the open, plans were made for her to take part.

Fig. 1—Children Flying Kites.

The choice of the artist's theme arises from her wishful imagination of being able to sit freely in a wheel chair using the right hand to control the string of a kite.

The patient usually displayed a self-assured and relaxed attitude. Her performances were among the best in the school. She did not over-rate her artistic work although it was much noted and admired by others. Her state of mind reflected balance and her personality was pleasant. No doubt, she had moments of depression, but her courageous and positive approach to life was dominant, and tensions and conflicts did not often penetrate to the surface. Recently she accompanied her mother on a trip which necessitated her sitting in the train for six hours, closely hemmed in between other passengers.

The young lady shunned publicity and discouraged newspaper reporters from writing up her story since she anticipated that this might be done in a sensational manner. In talking to her, one learned that she felt pity for some of her fellow patients who though less handicapped "had failed to choose suitable vocational and life tasks for themselves." Of herself she said that she had "been lucky."

Fig. 2—Self-Portrait of Tetraplegic Artist

The artist holds a pencil between her teeth, guiding it through combined movements of neck, tongue and mouth. Communication with the world is possible for her not only through speech but also through the highly differentiated medium of art which she has learned to master. As a result, she has established human contact with many other people and in the process elevated herself to a high level of dignified individuality and independence.

Comment

For many years we have presented evidence of extraordinary performance achievements by physically disabled individuals (3,4.) Among them were three Olympic champions, one in hammer throwing, another in pistol shooting, a third in the equestrian dressage competition. The first of these athletes had been afflicted with Erb's paralysis of the left arm; the second with loss of the leading upper extremity; the third with extensive paralyses of the legs. So far such observations have almost invariably been interpreted as indicative of compensatory mechanisms establishing themselves, with such a degree of effectiveness as to facilitate the record performances in spite of the subjects' severe handicaps. The question why similar mechanisms are not mobilized in normal persons and why their effectiveness cannot thus be superimposed

upon *unimpaired* physiological resources has never been answered. If such superimposition were possible record performances of normal and of disabled athletes would be incomparable in their respective magnitudes.

Clinical and physiological evidence of the kind under review leads to this conclusion: Because of the presence of physical defects, of *major* defects such as in the case of the young tetraplegic artist whose history has been detailed, and of the three disabled Olympic champions, or of *minor* defects as in the case of the knee injury of Rafer Johnson at the time he prepared himself for his world record decathlon performance in Moscow in 1958 when the injury was still present; these individuals must have formed their motor habits—directed as they were towards esthetic or athletic objectives—in a manner essentially different from that demonstrable in normal persons or under normal conditions, e.g. as in Johnson's case. Normal persons establish habits haphazardly, as it were, because they have such a variety of neuro-motor possibilities and alternatives to choose from; even champions are unlikely to arrive at optimal patterns. Accepted methods of training are bound to lead, it is true, to performance improvements. But such improvements take place within the rather rigid framework of the prototype.

By contrast disabled athletes and artists who reach such superb performance levels as those described—rare though such cases are—are confronted by an "all-or-nothing-situation," a situation which quite understandably most of them are unable to master. But in terms of the criteria under discussion such situations are not mastered by the majority of normal subjects either. That to this situation some crippled or injured persons have been able to find answers, as the evidence shows, is due to the fact that in response to the challenge they mobilize motor patterns of different and superior quality than do most disabled people, as well as most normal subjects, when meeting new motor challenges.

In some instances it has been possible to define the kinetic or neuro-physiological principles thus introduced into art or sport by disabled individuals. The remarkable gradualness and crescendo quality of the final grip-pull which the Olympic hammer throwing champion with Erb's paralysis of the left arm achieves as a result of the unequal lengths of his upper extremities explains his record throws. The exceptional gentleness with which the great horseback rider with her abnormally weak legs handles her charge, a gentleness originally forced upon her by the pareses of her lower limbs, was subsequently incorporated by her into a well established motor pattern that enabled her to attain her top level athletic performances. Horses may altogether be more sensitive than is generally assumed. Johnson's unmatched track and field achievements emphasize the significance of exploiting further than is presently done the neuro-physiological preponderance of one cerebral hemisphere over the other. The question of cultivating, as we now do in most sports, in an equal manner corresponding bilaterality will have to be re-examined.

Current views postulating a universal validity of measurements as basis of assessment of physical efficiency are arbitrary and unsatisfactory. Human performances are never reflected in their entirety in quantitative results of testing procedures, important as they occasionally may be. A complex element of conceptual awareness and of situational comprehension is involved in every intentional neuro-motor act of man. The latter is not amenable to measurement though it is open to examination by combined morphological, neuro-physiological and phenomenological techniques (6.)

For the understanding of the *modus operandi* underlying exceptional motor performances, comprehension of the nature of habit formation is the main key. This statement applies distinctly also to the problem raised by the uninterrupted process during the past 50 or so years of improvements of athletic records. Achievements such as those of Johnson, Zapotek, Kucs, O'Brien and Elliott cannot be fully explained in terms of quantitative physiology, e.g. of anthropometric data, muscle power, flexibility, oxygen intake, cardiac stroke volume, height of T-wave and other partial determinants. Exceptional performances like the ones under reference are characterized by "new" motor patterns such as had previously been unknown. To paraphrase Sherrington's statement, breaking the rigid fixity of a motor pattern implies that "the master himself must do the job again and again;" an injunction which has so far not been systematically applied, either in education or in art or in athletics; because it has not been understood. Maybe it cannot be applied on a broad basis though it will be worthwhile to try. The validity of the above injunction pertains to both the individual as well as the collective sector. This is the reason why "new" styles and "new" forms and "new" etiquettes are the formal prerequisites of all "new" artistic, cultural and intellectual "eras," "schools" or "epochs" which in retrospect are so often characterized as "revolutionary;" because they reflect the impact upon their time of great individuals whose genius had to create new forms so as to convey new concepts.

Only exceptional people can re-do a motor pattern and thus mobilize fully latent neuro-kinetic resources notwithstanding the fact that the latter are

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PHYSICAL FITNESS INDEX IN PSYCHIATRIC PATIENTS*

HARRY T. ZANKEL, M.D.**

JAMES M. FIELD, B.S.***

In a previous report (1), it was shown that the physical fitness index (PFI) in diabetic patients could be increased by 20% following a program of corrective exercise 15 minutes twice daily. This is a report of PFI studies made on 50 psychiatric patients at the beginning of hospitalization and following variable intervals. There is an additional report of eight patients who received intensive exercise at least once daily and the effect of such exercise on the PFI.

Patients admitted to the Psychiatric Service of Durham VA Hospital undergo a dynamic program of treatment and rehabilitation including drug therapy, psychotherapy, electro-shock therapy, occupational therapy, corrective (exercise) therapy, and recreation. The objective of treatment is not only to relieve the symptoms for which the patient is admitted but, whenever possible, to give him an insight into the cause of his disability. The patient is also referred for activity not only as a means of therapy and resocialization but also to prevent the physical deterioration that might result from inactivity. The purpose of this study is to determine whether this program is of value in terms of achieving the desired physical objective.

The test used as heretofore is the PFI test described by Rogers (2). As in the previous report, the Rogers' physical fitness test was used and the results compared with the norms established by this author. The following items are required for the evaluation of the Rogers' PFI: age, height, weight, lung capacity (in cubic inches with a wet spirometer), grip strength as measured by a manuometer (right and left hands), back lift, leg lift, and arm strength. The arm strength is obtained by adding the pull ups and push ups, multiplying this sum by the weight of the patient divided by 10, plus the height minus 60. This is then compared with the NSI (normal strength index) obtained by Rogers from examination of normal individuals. The PFI is obtained by dividing the ASI by the NSI and multiplying by 100.

All patients were referred for corrective therapy by the ward doctors on the psychiatric service. As soon after referral as practicable they were given the PFI test. The time between admission and the first PFI test varied between 0 and 22 days. The time between the first PFI and the second PFI varied between nine and 72 days.

Medication used was triliphon of chlorpromazine. Shock therapy consisted of EST.

Results

Table 1 shows the average PFI test scores of 50 patients after admission and after a period of treatment consisting of medication, shock therapy, occupational therapy, exercise therapy and recreation.

Table 2 shows the PFI test scores of eight patients after admission and after a period of more intensive exercise 15 minutes once or twice daily.

From the above tables it will be seen that on admission the average PFI score in psychiatric hospitalized veterans was 67.5.

A routine program of activities such as outlined prevented physical deterioration as shown by an improved average PFI of 73.5 after the activity program. In the smaller group of eight patients, the PFI average was raised from 65.5 to 71.5.

Discussion

In a previous study of diabetic patients it was shown that the average PFI on admision was 50. This was raised to 60 after intensive exercise. In the series of 50 psychiatric patients presently reported, the average PFI was 62. It would seem that the PFI of psychiatric patients is also lowered though not quite as much as in diabetic breakdown. The PFI after an

No. of Patients	Average PFI			%
	B.T.	A.T.	Change	Change
50 routine	67.5	73.5	6	+9

TABLE 1

*Presented at Tri-Organizational Conference, Atlantic City, N. J., July 24, 1958.

**Chief, Physical Medicine and Rehabilitation, Veterans Administration Hospital, Durham, N. C.

***Chief, Corrective Therapy, Veterans Administration, Hospital, Durham, N. C.

No. of Patients	Average PFI			%
	B.T.	A.T.	Change	Change
8 routine+exercise	65.5	71.5	6	+9

TABLE 2

activity program consisting of exercise, occupational therapy, recreation, psychotherapy, drug, and shock therapy, resulted in an increase of average PFI from 67.5 to 73.5, or 9%. Thus, the old adage of *mens sana in corpore sano* seems to be statistically confirmed. The intensive exercise given eight patients did not result in a greater increase in PFI than that produced by the routine program for psychiatric patients. Hence it is questionable whether such an intensive exercise program is warranted.

Summary and Conclusions

The PFI of 50 hospitalized patients was determined before and after a program of treatment consisting of exercise, occupational therapy, recreation, psychotherapy, drug, and shock therapy. The average PFI before treatment was 67.5; after treatment it was 73.5, resulting in an improvement of 9%. An additional eight patients with a PFI average of 61 received an intensive exercise program in addition to the psychotherapy and drug therapy and shock therapy but no other exercise therapy. The improvement here also was 9%.

A program of activity for psychiatric patients will result in an average increase in their PFI.

These studies are continuing.

We wish to express our appreciation to Dr. Joseph B. Parker, Jr., Chief, NP Service, and his staff, for their cooperation in this study.

1. Zankel, H. T., E. Raymer, M. Ullman and E. Chiorian, Physical Fitness Index Studies in Hospitalized Diabetic Patients. *Archives of Physical Medicine and Rehabil.* 38, April, 1957.
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RESEARCH—Cont'd from P. 43

chiatry in general. It would appear that the complexity of the problems is the greatest handicap in research. In spite of this we must try to formulate fundamental problems which are to be investigated in order to evaluate the effects of physical medicine and rehabilitation activities. We feel that there is an inter-relation of the needs of the patient, the aptitude of the patient, and the modality. Each of these dimensions has many fundamental and provocative problems in need of investigation.

Two on-going research programs at VA Hospital, Bedford are described briefly, one investigating a universal need of patients and the second, the aptitude and skill required for various occupational therapy tasks.

Although at present we have only an empirical basis for patient assignment we feel that a program of research is essential for providing a scientific basis for the treatment of the psychiatric patient thru the modalities of physical medicine and rehabilitation.

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CHANGE MEDICATION AFTER TB RESEARCH

Research results that will enable doctors to substantially reduce drug reactions and the cost of treatment of tuberculosis have been announced by the Veterans Administration. In a two-year controlled study, administration of isoniazid alone was as effective as administration of a combination of isoniazid and PAS for previously untreated pulmonary TB patients without lung cavities, VA said. The two drugs commonly are used together against the disease. PAS, however, produces reactions such as nausea, vomiting, and a rash in a considerable number of patients.

This first study involved some 280 patients at 41 VA hospitals and at Fitzsimons Army Hospital in Denver and St. Albans Naval Hospital on Long Island, N. Y. Another VA study determined that for previously untreated pulmonary TB patients who do have lung cavities the combination of the three drugs most commonly used against tuberculosis produced no better results than two-drug combinations.

Use of either isoniazid with PAS or isoniazid with streptomycin was as effective as the use of all three simultaneously, and addition of the third drug increased the number of drug reactions. This second study involved 1,166 patients from 28 VA hospitals, the Fitzsimons and St. Albans hospitals, and the former hospital at Parks Air Force Base, California.

Both studies were part of the continuing VA-Armed Forces cooperative study of the chemotherapy of tuberculosis, begun in 1946. Findings were reported to a recent meeting of the VA-Armed Forces study group in St. Louis.

SOCIAL ASPECTS IN THE REHABILITATION OF THE PHYSICALLY HANDICAPPED*

HERBERT BERSTEIN**

I find excitement and challenge in working in a rehabilitation centered agency. My job is not entirely without risk, as you can see, since I am called upon occasionally to speak at conferences. You will agree that all of us in the rehabilitation field have a reputation to uphold as inveterate optimists. I believe that scientifically oriented optimists have a responsibility to take an organized look periodically at what is going on in our field. I want to take such an organized look today at some of the social aspects of rehabilitation, in my dual capacity as optimist and social worker.

We are living at a time when research is discovering new theoretical bonds between the physical, behavioral and social sciences which will help bring about a more complete understanding of man, his personality and his environment. Medicine is making enormous strides in determining the etiology, diagnosis and treatment of various disease processes. Psychiatry, psychology and social work have contributed to our knowledge of the psychodynamics of personality, of emotional growth, and adaption to stress in life. While we have been provided with a reasonably well integrated theoretical system within which to understand the inner psychology of man, we need to develop a parallel conceptual framework for the formulation of cultural and social dynamic factors that determine human adaptation. The goal to be achieved is a non-hyphenated "biopsychosocial" view of man.

This viewpoint was most clearly expressed by a leading theoretician in the social casework field, M. Robert Gomberg, who wrote just prior to his untimely death: (1)

> We are now in a period of integration and synthesis of our psychological perceptions and our appreciation of the crucial role played by social forces in shaping personality.
>
> For a long and probably necessary period of time, the professional microscope was pointed sharply at the inner life of man. Profound new discoveries were given to us by a giant, Sigmund Freud. Many years were required for us to explore this chapter and begin to comprehend the mysteries it revealed. But perhaps one of the penalties we paid was that during this period our psychological preoccupation with the inner life removed us from the milieu in which it must do its living—from an awareness that the inner life ultimately takes on its meaning and its purpose when it is seen in the setting of the family and the community, and in iteraction with various social forces.
>
> We also lost sight of the fact that these social forces are not purely incidental, not simply the background against which individual personality expresses itself, but enter deeply into the adjustments and maladjustments of human beings. Now we no longer choose between the psychic and the social and create all those arbitrary dualities that attempted to separate man's inner existence from his outer living. We are moving toward an appreciation of how the interaction of the individual and the society itself truly fulfils human purpose in living. We see that society is not an accident, for man has shaped it, and that in turn, society contributes to the shaping of man.

Now that we are no longer isolating social and cultural forces from intrapsychic processes, we are moving toward a more integrated framework. I do not wish to minimize the twin problems which must be solved before such a framework can be achieved. One problem has to do with the technical difficulties and gaps in our knowledge. Sufficient work has been done in this area so that we recognize the crucial influence of the family unit, the community and the culture in etiology and in treatment or alteration of individual dysfunction. However, at this stage, the field still lacks the necessary conceptual equipment, methods of synthesis, and classification systems, to mold the biological, psychological, social and cultural factors into a comprehensive theory of causality and of treatment and alteration. The second problem is the philosophical. We have not yet adequately explored the relation of man to his social and cultural structures either at a given point in time or over a span of history. Such a larger synthesizing framework will contain the context for the solution of the more immediate technical problems.

Social agencies throughout the country now tend to identify the family unit as the crucial area of investigation in approaching the previously outlined twin problems. I believe that such an approach is equally vital in the medical setting, if we are to increase our theoretical and applied knowledge in rehabilitating the physically and psychologically handicapped. My premise is that the *locus* of rehabilitation ought to be the family unit, even though one of its members is disabled or handicapped. We have achieved too many failures by focusing solely upon mechanical restitution of the patient, only to find that the family unit has reintegrated itself on another level, and permanent institutionalization is seen as the socially acceptable solution for the patient. Similarly, too many patients are institutionalized within the confines of their own homes, in which family integrity

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*Presented at the Second Tri-Organizational Conference, Atlantic City, N. J., July 22, 1958.

**Chief Social Work Service, Veterans Administration Hospital, Bronx 68, N. Y.

has been destroyed, where several people bearing the same surname happen to occupy the same living quarters. We cannot measure our success either in terms of length of hospital stay or discharge rates. One criterion of rehabilitation that requires further development is the degree to which we can restore the family unit towards that measure of creative living which its capacity permits.

I want to turn now to a discussion of the assessment, planning and preventive social aspects of rehabilitation, as well as some considerations of the handicapped person's own situation within the context of family life.

In order to provide rehabilitative services to the handicapped, the clinical social worker must first of all be skilled in assessing the impact of disability upon social functioning and the relevance of social resources to needs as he and the family unit perceive them. He inquires into the patients' roles in their families, the responsibilities they have assumed, the nature of their relationships with other family members, the manner in which role performance by patients affects role performance of other family members. He tries to ascertain the extent to which behavior constituting the social functioning of the entire family of the disabled person reflects his disability in one way or another and to determine whether such behaviors are really necessary consequences of the patient's disability, or merely one mode of mutual accommodation. Thus, the daughter of a handicapped breadwinner may be helped to determine whether it is really necessary that she postpone marriage in order to meet possibly mistaken conceptions of filial responsibility.

The social worker (in cooperation with the family unit) examines the manner in which the disability impinges upon overall social development, and upon role performance at their work, in their peer groups and in other relationships. He inquires into the disability's impact upon the client's capacity to make effective use of rehabilitation services and other social resources.

The social worker attempts to achieve a deep understanding of the goals disabled persons and groups have set for themselves, their conception of the functional implications of residual capacities (i.e., of the realistic consequences of their disabilities). Disability may exacerbate pre-existing feelings of guilt and unworthiness, or the patient may be entrapped by attitudes he harbored toward the handicapped at a time when he himself was still able-bodied; or great symbolic significance may be attached to the cosmetic aspects of impairment. The social worker seeks an appreciation of attitudes which seem a response to limitation of capacity, relating them to pre-existing personality and familial attitudes towards appearance and capacity.

He defines the objective characteristics of the client in his situation, seeking a realistic appraisal of the person's actual physical, emotional, intellectual, and social potential. He does not content himself with his immediately apparent personal resources, but evaluates these, along with historical information on interactional performance, to achieve a clearer appreciation of potential in the light of his own understanding of rehabilitation resources and experience.

The social worker also inventories the resources at the patient's disposal from without: the support he can expect from families and friends, non-material as well as material sustenance; the help the worker's agency enables him to put at the disposal of clients; other community resources in social agencies and thru other media (such as service organizations or trade unions).

Having assessed the personal and social situation of handicapped patients, the social worker involves them in the jointly agreed upon plan for rehabilitative services. In the rehabilitation process, identifying intermediate goals and relating them to long-range perspectives is of crucial importance. A patient may need considerable help in envisioning the many (often arduous) intermediate tasks he and people in his environment must successfully accomplish in his efforts to make more successful employment of his limited resources.

Thus, a patient who is well motivated to learn how to walk with crutches may need help in understanding why he must concentrate upon arm exercises before he can start learning how to walk again. And a patient who is conflicted about his ability to hold a job may need help in appreciating the value of an interim work-hardening regime in a sheltered workshop, or may have to be prepared before he learns the skills of the job-seeking process.

The social worker must have clear enough understanding of the implications of objective limitations to discourage patients from undertaking to achieve unattainable objectives; yet he must also know what an indomitable spirit assisted by modern science and technology can accomplish, so that he does not "sell clients short." The social worker must be capable of perceiving a total lack of rehabilitation potential (even granted the best of services) on the one hand, and on the other, patients and family units whose social functioning is at a level such that despite their disabilities they are not in need of rehabilitative services. The social worker will not intrude upon the adjustmental prerogatives of a mature and competent adult

though he may be in need of a prosthesis replacement while functioning optimally in his social roles in family, place of work and community organizations.

Through his understanding of the various areas in which disability can impinge upon social functioning, and the variety of adjustmental needs which may be experienced by individuals and families limited by disabilities, the social worker can provide or arrange for and, with others, provide a variety of services.

Services may be provided through interview, group discussion or other means such as role playing. They may be provided by procuring or helping the patient procure material resources which have an impact upon his potential or his level of social functioning (housing, transportation, special diet, medications and appliances, financial assistance). The social worker assists patients in acquiring self-assurance and skill in a variety of group living situations among their peers. He may help handicapped persons to profit by one another's experiences in all-handicapped groups. And he may help those who are ready to move into non-segregated groups including the non-handicapped.

The social worker assumes certain responsibilities for helping patients achieve a factually-based orientation to their objective limitations, but to their potentials, as well. He helps patients bring before physicians and others certain vexing questions for which they seek authoritative answers. He helps clients to understand how certain behavioral areas (sleeping, diet or energy output) affect the course of their rehabilitation and the extent of their disability.

The social worker helps disabled clients understand how they can earn a livelihood, play a useful part in family life, participate in community affairs, engage in recreational activities and achieve satisfying peer relationships with other persons. He may also, through strengthening the clients' psychological adaptability or helping alter their life situations, help those whose social functioning is impeded by anxiety, hostility, dependency or depression, to resolve those obstacles to the goals they most desire. For example, the social worker may help bring an institutionalized patient to the point where, through learning techniques of self-care, self-awareness and self-direction, he can return to a more satisfying life in the midst of his family. Regardless of the technique he finds appropriate, the social worker concerns himself with manifestations in social interaction rather than intercession at the unconscious level.

The social worker periodically reviews rehabilitation progress with clients. He is prepared to encourage change of goal as circumstances change. He helps the patient and family maintain motivation regarding the rehabilitation process, employing periodic reassessment to stimulate the patient and family to express their conception and correct any distortion about the advances and setbacks which are so typical. He participates in team decisions regarding alterations in rehabilitation planning and goals, interpreting these decisions to the family unit wherever necessary. He works with patients and families after the rehabilitation goal has been judged to be achieved to determine whether their experience really reflects the degree of success that has been assumed. The social worker concerns himself with all of the areas of social functioning in which the disabled patient and his family may be in need of rehabilitation services.

The social worker is concerned with the rehabilitation of handicapped persons with whom he does not come into contact. Regardless of the locus of his practice, whether in direct services or as supervisor or administrator he is constantly on the alert for opportunities to improve agency procedures as they affect the agency's scope and effectiveness in helping the handicapped. He is alert to the potentials for service in agencies which are not specially concerned with the handicapped, but provide help to broad segments of the population, segments including numbers of handicapped people.

The clinical social worker will be sensitive to situations in which agency schedule and procedure may impinge upon a particular patient in a fashion inhibiting to his rehabilitation; he sees policies and regulations as tools for human service and moves in a professionally responsible manner to modify them when they prove to be poor tools. The social worker is on the alert not only to improve existing procedures but to evolve new ones which will provide more categorical answers to similar problems which may be the subject of wasteful clinical study time after time. The evolution of routines for handling prosthetic and nutritional expenses of public welfare recipients has proceeded along these lines, as has the provision of minor prostheses, such as eyeglasses and dentures, for disabled veterans who require such appliances on medical grounds during extended hospitalization.

The social worker is alert to the need for developing more effective inter-agency working relationships to broaden oportunities to whole populations. He is ready, through formal research and the informal cumulation of observation in individual instances, to move toward broadening his own agency's service program or intake policies by demonstrating inconsistencies between declared objectives and actual practice. He works within his own agency and through social planning bodies and citizen groups for a more

careful assessment of the needs for service on the part of handicapped people in the community. He is continuously concerned in working with professional colleagues and the lay public that professional standards be understood and maintained and that services provided the handicapped be expanded without fear or favor until they really reach all who can profit by them.

In order to go about providing services to the handicapped, the social worker, as well as medical and para-medical colleagues, must first of all have a good working understanding of the situation in which patients and their families find themselves.

We must achieve a working conception of the difference between "disabled" persons (those whose capacities are impaired) and the "handicapped" (those whose curtailed capacity has resulted in an impairment of social functioning). We must acquire the ability objectively to analyze the way of life of an individual with a medically identifiable disability of a substantial character, to determine whether in the light of his understanding of the role performance demands made upon the disabled person, and that individual's residual potential, any impairment of social functioning has eventuated from the disability.

We must have a comprehensive understanding of the limitations imposed upon social development, upon role performance by impediments to locomotion, to intellectual processes, to emotional behavior, and capacity to relate to others; we must know the crucial part played by sensory faculties in learning new or relearning old tasks; and the impediments, blindness, deafness or amputation place in the way of social maturation. We appreciate the impact of disability upon the diverse "activities of daily living." We must come to appreciate that few men are completely healthy, and that all men are characterized by limitations of capacity, especially physical capacity. We must therefore learn to think of capacity with reference to the social task at hand, recognizing the role of mechanical aids (from crutches to electric motors) in broadening the functional competences of all men.

We must be aware, also, of the impact of prolonged institutionalization upon the social development of individuals, the stress created for family members who must assume unaccustomed roles (i.e., breadwinner, decision maker), and the differential impact of isolation from the main stream of life when it occurs at crucial stages of social development and family life.

Of greatest importance is the differential hazard to social function implicit in disability incurred at various stages of individual development; the special implications of congenital disabilities, the impact of childhood disability upon processes of social learning, differentials in impact as between disability incurred during adolescence and disability to which the person finds himself obliged to adjust only after having established himself, say, as family head and breadwinner. We must keep alert to the differences in the accommodative process when disability is a result of chronic illness and disability sustained as a result of accident.

We need to explore the impact of disability upon the social status of an individual, the popular image to which he may be expected to conform, as held by himself, his family and peers, the disparities that may arise between generally prevalent social expectations and those his intimates project upon him.

We must remember, also, that acceptance of the fact of disability is often avoided by patients and families, and that a considerable hiatus often obtains between verbal acquiescence to "the facts of life" and a thorough-going integration of that acquiescence into the disabled person's and family's world outlook and personal philosophy. Psychological crippling should not be expected routinely as a consequence of disability, and it is important that we learn to seek evidence in this area, rather than jumping to conclusions. We should, however, achieve an understanding, based both on theoretical and clinical teaching of the fact that disability can lead to a sense of personal unworthiness.

All clinicians in rehabilitation should have a working understanding of the diverse manifestations and etiologies of feelings of guilt, shame, hostility as reactions to disability. We have to be perceptive of the ways in which religious belief is employed by the disabled person (in socially constructive as well as in destructive fashion) to balance his intra-psychic economy. We need to acquire an understanding, too, of attitudes of lethargy and fatalism as they relate to the social functioning of the handicapped. As clinicians, our emphatic sense should be cultivated to the point where over-compensatory activity and excessive good cheer are detected in their spuriousness.

Rehabilitation clinicians will agree on the importance of understanding the catastrophic consequences after disability of an earlier self-image by patient, rooting the person's sense of worth in gymnastic proficiency, physical attractiveness, sexual prowess. We must understand also differentials in the undermining of self-esteem as between men (to whom the body is more an agent for task performance) and women (who may feel likely to be judged more for "what they are" than for "what they can do").

We have learned that earlier crises in personal and family life may have given rise to factors affecting the crisis situation of current disability and that our

Cont'd on Page 64

CORRECTIVE THERAPY FOR THE DISTURBED PATIENT*

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Introduction

During the past 50 years in the field of psychiatry, there has been a gradual change in philosophy of treating patients in mental hospitals. There has been increasing emphasis placed on various types of activities which are calculated to help a patient resocialize. Various allied professional fields have grown which work cooperatively with the medical profession in achieving these goals. There has been increasing emphasis placed on individual attention and the prescribing of certain types of activities for patients in accordance with their needs.

One of the allied professions which has been developed is that of corrective therapy. Gradually, corrective therapists have experimented with new activities and found the disturbed patient is able to successfully participate in more highly structured activities and more complicated apparatus. This broadening of scope has brought corrective therapists in contact with difficult problems in the hyperactive and disturbed patient.

What Constitutes The Disturbed Patient?

Motor activity

The first manifestation of the disturbed patient that is apparent to the eye is the motor activity which is exhibited. These patients are generally markedly restless and spend a great deal of time pacing up and down the ward or even running. They are noted to perspire profusely and to show other indications of their marked agitation. In general, they are rather inaccessible to conversation and they frequently appear excited to the point of being wild-eyed. They are noted for their impulsivity and tendency to be assaultive. Often speech is almost constant, and their voices becomes roughened and somewhat course in quality. The disturbed patient will show seemingly purposeless activity such as touching various objects or even disrobing himself. He will collect all sorts of debris from the floor and might begin to destroy various articles such as furniture and clothing. He is noted to strike the wall physically with his hands and head. One often notices certain types of stereotyped behavior such as repetitions of movements and words. In a general sort of way, the patients tend to show responses with much greater movement than a situation would ordinarily require.

The Psychopathology

In general, the disturbed patient shows a marked failure of those defensive mechanisms which ordinarily maintain a modicum of emotional equilibrium in the organism. It is generally understood that parts of the personality which are usually repressed begin to reach consciousness where marked anxiety is generated. As a consequence of this tension, a state of "unrest" is created in which the organism tends to dissipate energy through various types of activities. The tremendous amounts of anxiety which are generated in such a condition are very often the motivating force of the marked increase in the patient's motor activity.

In the disturbed patient, the following descriptive phenomena are often observed:

(1) The patient is noted to have extremely poor concentration and a moderate increase in his capacity to be passively aware of details around him. This is probably the consequence of his marked preoccupation and psychobiologic disorganization.

(2) Very often such patients express ideas which are seemingly unrelated to one another. This is the consequence of a marked disturbance in the associative patterns of thought. Relationships and ideas become vague and somewhat disorganized. The patient is noted to vacillate considerably in his speech, and it is difficult to follow the pattern of his ideas. Such an incapacity to communicate and the disturbance of associations prevents the medical worker from experiencing empathy in working with such a patient.

(3) Disturbed patients tend to use rather odd and extreme generalities, probably as a consequence of their marked social withdrawal. This is an indication of their poor contact with reality and, since they have little urge to "explain themselves" or adequately communicate what ideas they have, it is extremely difficult to anticipate what they are thinking or what their needs are. This is probably the basis of much of the irrelevancy that one finds in the disturbed patient. The individual is unable to discriminate be-

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tween those thoughts which are extraneous and those thoughts which are important. As a consequence there is no priority of expression, and thinking becomes scattered and disorganized.

(4) Since the higher functions of thought are almost always the first to become disorganized as the organism is flooded with anxiety, the patient is unable to differentiate between cause and effect. This results in his failure to be able to abstract and results in a loss of social rapport.

(5) Because consciousness is crowded with ideas which have strong emotions attached to them, the disturbed patient shows a type of speech which is unprecise, muffled, and accompanied by poor enunciation. Often there are multiple thoughts occurring at the same time in the patient's mind—each one with associated effects so strong that it is difficult to discriminate which one should be expressed.

(6) The disturbed patient utilizes rather odd types of symbolism. This is possibly related to the patient's social withdrawal and the fact that he cannot perceive himself as others see him. This results in little critical restraint in his own actions and permits his emotions to become attached to symbols which another person would probably reject.

(7) Emotions which are ordinarily repressed become attached to conscious thoughts and are projected toward the environment. This results in the patient's ideas seeming strange and incomprehensible to those who are working with him. These patients will react with intense feelings to various words and phrases used around them which appear seemingly neutral.

(8) Condensation is utilized by the disturbed patient in which constellations of thoughts or feelings are expressed in a single word, once again resulting in difficulties in communicating to people around him.

(9) With the loss of control of his thoughts and the flooding of consciousness with very strong emotion, the associative patterns are disturbed and the patient loses his ability to separate what is real from what is unreal. In this manner he is unable to differentiate between those stimuli from the outer world and those stimuli from within himself.

(10) The disturbed patient very often shows a type of dereistic thinking which is vague and dreamlike in quality. This has rather strong overtones of pleasure and is analagous to the musings of a child. It is illogical but partially self-gratifying. There are mild expansive trends in such a person with little discrimination as to the reality basis. The disturbed patient is often noted to be actively hallucinating. He will hold conversations with nonexistent people or move actively through the ward holding his hands over his ears as if to escape some pursuing voice.

(11) With the disorganization in the psychobiologic unit there is a loss of ego structure. This is characterized by a loss of those attributes which we speak of as being cultural. With these disappear those restraining mechanisms which are part of the social structure. The patient then tends to become not only impulsive but also markedly careless of hygiene and social habits.

(12) In some cases there are numerous physiological disorganizations which are the consequence of an impairment of tissue function (such as senility or hardening of the arteries in the brain). These would result in the loss of intellectual capacity, loss of memory, and the other factors which were mentioned above. By the same token there would be a loss of emotional interests in things which were held previously important such as children, relatives, and friends.

(13) Very often the disturbed patient shows unbuffered effects such as those of terror, sorrow, anger, perplexity, and depression. These emotions are expressed overtly and with such intensity as to present real clinical problems in management.

Corrective Therapy Treatment

The disturbed patient presents rather special problems to the corrective therapist. Inasmuch as the therapist almost always works with a small number of patients, one of the first problems that arises is the fact that the disturbed patient tends to disrupt the management of the group. The type of behavior and thinking characteristics as mentioned above make the individual extremely difficult to control. Another factor which presents special problems is the individual's basic emotional inaccessibility. Since it is difficult to establish emotional rapport, it is hard to motivate him in any kind of specific corrective therapy activity. The disturbed patient tends to be extremely noisy and this is always a source of irritation for other people who are perhaps somewhat better integrated. As one must always use persuasion rather than force, the loss of usual emotional rapport detracts from the therapist's persuasive effectiveness. Since there are many different types of conditions which can result in behavior which would be described as "disturbed," it is important to try to equate corrective therapy techniques with the characteristics of the individual patient and his emotional structure. It is important for the corrective therapist to be in close liaison with the medical officer of the ward. He is able to clarify the medical aspects of the case to the corrective therapist. For example, capacity for recall, social withdrawal, intellectual confusion, aggressive-

ness, or suicidal trends might be special problems which would deserve individual attention and evaluation. The patient's diagnosis constitutes a generalization of a certain clinical syndrome. With this in mind, we will attempt to describe some possible techniques of handling patients within each diagnostic category, using such a category to group patients of similar behavioral characteristics.

Disorders Caused by or Associated With Impairment of Brain Tissue Function

In working with individuals who have an acute brain disorder, due to such causes as infection, alcoholism, drug intoxication, or trauma, it is important to try to equate the corrective therapy activity with the particular defects and structure of the case. Since the basic syndrome is characterized by a marked impairment of intellectual functioning, it is advisable to try to limit the corrective therapy activity to one in which there is a minimum of instruction and complication. For example, the characteristic of this particular group of disorders is the marked impairment of orientation and memory. Since recent recall would be very difficult for such a patient, he is often unable to participate in an activity in which he has to constantly bear in mind certain rules and regulations. A game which would require the compilation of a score would be extremely difficult for a patient suffering from this type of disorder. Consequent failure to bear in mind the scoring of the game might result in a catastrophic reaction with increased hyperactivity. Activities such as shuffleboard, relay games, and boxball would be contraindictated. In a general sort of way, the type of activity which would be contraindictated would be one in which there is a reasonably complex system of rules and regulations and one in which a fine neuromuscular coordination is required .

Because there is a marked defect in the area of intellectual functioning, such a patient should be encouraged into corrective therapy activities which would be simply structured and preferably somewhat repetitious. Since such a patient has a remarkably narrow sphere of intellectual functioning, he would find repetitive acts rather relaxing. In this category would be activities such as medicine ball drill, rowing machine, and hiking, and simple catch, using a volley ball. Where a schizophrenic patient would become impatiently bored, the individual who is suffering from an acute brain disorder would experience a dissipation of tension and also reassurance that he is able to function in a structured situation. The judgment of such a patient is so markedly impaired that any type of activity would have to avoid the possibility of physical injury occurring because of clouded thinking. Activities which could be utilized with this type of patient would be along the lines of pumping a stationary bicycle. This activity would be physically exerting, would reassure the patient that he is able to function with a certain type of equipment, and at the same time would not provoke him with the monotony of its repetition. Activities such as throwing an indoor baseball back and forth might be contraindictated since these individuals very often have a disturbed sense of equilibrium. Their neuromuscular functions are somewhat retarded, and their reaction time is characteristically prolonged. Because the patient might fail to catch a hard ball and have it strike him in the face, this type of game should be discouraged.

Since the basic personality pattern is not disturbed, it is generally possible to establish some rapport with the individual and to engage him in some type of therapeutic activity. As a consequence of his participation, the patient is reassured that he is able to function despite the fact that he is in the hospital. His emotional tensions are dissipated through the physical exertions of the activity, and he becomes more manageable on the ward. The possibilities of impulsive behavior and depression are avoided when the patient can adequately dissipate emotional tensions through some type of physical and social activity.

Chronic Brain Disorders

The characteristics of this particular group of disorders is almost identical to those of the acute brain disorders. The basic difference is that the acute brain disorders will probably recover whereas the chronic brain disorders are generally stationary. The corrective therapist working with this type of patient must arrange a program for him almost identical to that of the individual who suffers with an acute brain disorder. However, it would be important that, once a program is established, the patient be encouraged as much as possible to remain within the structure of that program. This type of individual has marked intellectual defects and reacts with considerable tension whenever the pattern of his daily life is altered. By the same token, if this patient is encouraged into varied types of activities within a relatively short period of time, he will react with an increase of agitation and very often become completely uncooperative. One of the ideal situations for such a patient is to encourage him in some type of corrective therapy activity and then encourage

him to remain in it. It is always possible that some very mild increase in skill will result, and this is particularly reassuring to these individuals. Because of the limited capacity to recall, the situation must be of an extremely simple structure and must involve as little of the individual's memory as possible. Various types of motor activity such as throwing and catching, bouncing a ball, pumping the bicycle, or even organized long walks with the group would be of considerable benefit. Also these physically infirm people will participate in quoits, and throwing rubber tipped darts. Miniature golf may be utilized if it is modified and no emphasis is put on the score. Such an activity must be simply structured and must remain unchanged. This type of patient is not as easily bored as one might find with a schizophrenic patient. Very often individuals with a chronic brain syndrome will have various physical infirmities. These infirmities are often accompanied by some difficulty in maintaining physical equilibrium. As a consequence, the type of activities in which they should be engaged are cautiously selected to avoid the possibility of physical injury. Very often such a person is well on in years and does not have the physical resiliency of a young person. Because of osteoporosis there is the danger of fractures should they lose their balance and fall during an activity. As with acute brain disorders, the individual tends to have rather retarded reflex time and games such as ping pong are much too complex and too fast. Shuffleboard with its rules, competitive activities, relay games, badminton and team sports are generally not applicable. Since one of the largest groups of patients who suffer with a chronic brain syndrome are those patients who have rather progressed arteriosclerosis, they very often have poor cardiac reserve and it is somewhat hazardous for them to participate in activities which have a rapid tempo. This always includes the possibility of precipitating the individual into an acute episode of cardiac failure because his circulatory system is not up to the demands of increased activity. Since the patient is generally out of contact, he fails to complain about pains in his chest when anoxemia of the heart muscles develop. For this reason gymnastics, use of the treadmill, and team activities would be contraindicated.

Disorders of Psychogenic Origin or Without Clearly Defined Cause or Structural Change in the Brain.

A. Psychotic Depressive Reactions.

These patients are frequently extremely agitated and as a consequence are difficult to motivate in corrective therapy. Since there is a strong component of hostility in the depression of so many of these patients, it is advisable to try to utilize corrective therapy techniques such as striking a heavy training bag. If such a patient can be made to hit the bag, he begins to experience some sense of personal relief in ridding himself of his hostility. Soccer, in which the ball is vigorously kicked, or punch ball where it is struck with the fist, or throwing a football at a target are activities in which aggression can be relieved. Also, as his hostility begins to diminish, the patient is more accessible to other types of activity. Such an individual's physiology is generally as depressed as his emotions. It is to the patient's benefit to try to provoke him to some type of physical activity which will result in dyspnea. This helps rid the patient of much of the physical tension that he feels and has some salutary effect on his physical complaints of constipation and anorexia. Rope skipping, vigorous drill on the stationary bicycle, the speed bag, and group calisthenics can be a tonic to the patient's reduced tempo.

Corrective therapeutic modalities for the depressed, psychotic patient must be of such a nature that there is no possibility of the patient making a suicide attempt. Things like electric light cords, apparatus that can be lifted and perhaps driven into the patient's body, sharp objects which might be utilized as weapons, must all be avoided. The agitated, depressed individual, whenever possible, should be put in a situation where he begins to expend considerable physical effort at a rapid tempo. A treadmill type of apparatus is of value if such a patient can be made to run on it. Activities which involve a certain amount of shouting are of benefit for these patients who are so highly charged and yet so unable to rid themselves of their tension. The excitement of a relay game can sometimes provoke an agitated depressive to vigorous shouting.

These patients have very poor self-evaluation and react favorably when they can develop some modicum of skill at an activity. They are almost always grappling with a feeling of worthlessness which is reduced when they can participate in an activity and master its requirements. It is of considerable benefit to get the withdrawn, depressed patient involved in a group activity which has the structure sufficiently complex that it tends to draw him out of his self-preoccupation and forces him to function as part of a group. Arranging a circle and having a medicine ball thrown quickly back and forth across the circle at random tends to put these people very much on the alert, and momentarily re-socializes them. Whenever possible, a fairly rapid pace should be established in a type of activity which does not place any great immediate demands on skill. These patients do not care for structured games such as bowling or shuffleboard

but react favorably to deck tennis, volleying as in paddle tennis, handball and volley ball.

B. Manic Patients.

Since these individuals are so markedly hyperactive, it is almost always necessary to engage them in some activity which requires a great deal of motor application. If they can be directed into some vigorous form of activity such as hitting the punching bag, pumping the bicycle, or rapidly throwing a heavy ball back and forth, it is possible to diminish a great deal of their hyperactivity. Often they participate with great enthusiasm and one can utilize the attributes of the disease itself. Such an individual requires a very rapid type of movement and one which requires considerable muscular effort. This serves the function of not only forcing the individual into a social pattern but also dissipating a great deal of the tension that is associated with his manic behavior. Such participation reduces the tendency toward assaultiveness and in the long run permits the patient to become more accessible to other allied professional groups. Wind sprints on the treadmill are advantageous as well as use of the horizontal ladder. These patients do not function well in a situation which involves a complex movement, such as badminton or other highly structured games. Although they can handle the social aspect of it, they are too distractible and become markedly impatient with the fine movements that are required. Their sense of impatience quickly becomes provocative behavior and disorganizes the group.

C. Schizophrenic Reactions, Paranoid Type.

Patients with paranoid schizophrenic reactions require activities which are highly structured and require considerable skill. It is of therapeutic benefit to permit a paranoid patient to assume a role of leadership. This renders him more accessible to therapists of allied professions. The position of leadership permits them to direct their expansive and grandiose trends into a socially acceptable pattern of behavior. This aids the patient in his efforts to achieve emotional equilibrium.

Their hostility and aggressiveness are sometimes partially dissipated in activities that require considerable muscular movement and which involve some expression of anger. Such an activity might be hitting the heavy punching bag or working with the speed bag. Soccer, punch ball, and softball might also be of value. They seem to participate in competitive games very well and are capable of enjoying team and group activities Paranoids show stronger inclinations to socialize than other types of schizophrenics after their most superficial mechanism of defensive hostility is overcome.

D. Schizophrenic Reactions, Chronic Undifferentiated Type.

These patients tend to show more social withdrawal. They are very difficult to motivate and constitute the bulk of institutionalized patients. Despite the fact that they show this marked social deterioration, these patients do no really have any impairment in their capacity to appreciate the structure of a complex game. Consequently, they can play games which would appear to be difficult to grasp and may develop considerable skill at them. They experience some sense of personal accomplishment in these developing capacities. Such a sense of accomplishment is uplifting for them since the overall pattern of their lives is one of constant inadequacy. They very often become highly expert ping pong players and develop skill in other types of games that require not only elaborate rules and regulations, but also highly developed neuromuscular coordination. As they participate in such game situations, they become more socially acceptable, resulting in improved patient-therapist relationships.

It is of paramount importance that the therapist does not assign an activity in which the patient might fail. His catastrophic disappointment would result in greater social withdrawal which is, of course, antithetical to the therapist's intentions. The possibilities of their impulsive behavior must be borne in mind, and it is advantageous, whenever possible, to limit the number of objects which might be used as weapons of assault. Since there is no basic impairment of intelligence or intellectual functioning, such a patient might be involved in games which require considerable amounts of concentration and neuromuscular coordination. Gymnastic activities such as the high bar and parallel bar can be of value if the patient is motivated. Close supervision is, of course, indicated.

It would be important in such cases to try to evaluate which emotion is most forcibly repressed and attempt to alleviate it by incorporating it into some kind of activity. This can be clarified, as mentioned above, through discussion and consultation with the physician who is primarily in charge of the patient's welfare. Emotions such as anger can be somewhat dissipated with the use of the heavy punching bag. Sometimes resignation can be interrupted by involving the patient in a situation in which he will develop some technical skill and feel a sense of growth within himself. These patients are tremendously tense and it is important to try to involve them in a situation where this can be dissipated through muscular movements.

They have a limited attention span and are easily bored. It is advisable to perodically change the nature of their activity. After it becomes apparent that a patient has developed a modicum of skill at a certain activity and is unlikely to progress further, he should be engaged in something new, where, once again, he feels a sense of inner growth and developing proficiency. These schizophrenic patients can engage in competitive activities and may feel a sense of sharing with other individuals. This is the first step in their re-socialization pattern and very often one can observe seemingly withdrawn patients initiating a conversation in the course of some game. Although they are markedly hyperactive and disturbed, they can establish some tenuous contact with individuals other than themselves.

SUMMARY

The corrective therapist has adapted new activities to make them applicable for the hyperactive patient. This has presented him with new problems in how to manage cases which are unable to indicate their inclinations and needs. The psychoneurotic, the anti-social personality, or the character disorder can indicate their preferences for various corrective techniques. However, the disturbed patients present very special problems because of their incapacity to communicate, and because their actions and behavior are incomprehensible to the therapist. By working in close liaison with the medical officer, it is possible to prescribe activity for each disturbed patient in accordance with his diagnostic category and the physical and intellectual problems that such a diagnostic category implies. Thus it is possible, through careful manipulation of the patient, to avoid catastrophic reactions and to dissipate a great deal of tension that is the motivating force in his disturbed behavior. Effects which were provocative to the patient can be discharged in certain types of activities and, in this manner, assaults on the ward reduced. It is also possible to create a greater sense of social interest and to increase those conative forces which had been temporarily lost through his psychotic reaction. Because of this, the therapeutic effectiveness of the hospital situation can be enhanced, and corrective therapy can broaden the scope of its activities.

American Board for Certification of Corrective Therapists

(Addendum to Registry expiring July 1, 1959)

The following named persons are currently registered but were not included in the *Registry* published in our last issue. The *Journal* regrets this omission.

Arizona

George O. Belders
Laurance Weeks

California

David Anderson
Robert H. Mark
Ernest Milne

Illinois

John C. Eggert
Rosslyn H. Elvidge
Stanley E. Schofield

Iowa

Fred Humphrey

Maryland

Edward T. Pendleton, Jr.

Massachusetts

Robert Hodgdon

New York

Regina Birnbaum
Louis Braun
Gunnar Ohberg
John J. Pistor
Hyman Wettstein

South Dakota

Roy L. Swartz

Wisconsin

Kenneth R. Evans

DR. BARNWELL HONORED

Selection of Dr. John B. Barnwell of the Veterans Administration as one of the 10 top career men in the Federal Government for 1958-59 has been announced by the National Civil Service League.

The honor carries with it one of the League's annual Career Service Awards, the most highly prized national awards given to public employees by a citizens' organization.

Dr. Barnwell, who heads medical research and education for the VA in Washington, D.C., was cited for his part in organization of the VA-Armed Forces cooperative study of the chemotherapy of tuberculosis.

DR. MIDDLETON REAPPOINTED

Reappointment of Dr. William S. Middleton as Chief Medical Director of the Veterans Administration has been announced by Sumner G. Whittier, Administrator of Veterans Affairs.

Dr. Middleton has held the post since March 1, 1955. The new appointment, for a four-year term, was effective March 1, 1959.

As VA Chief Medical Director, Dr. Middleton heads the largest medical program in the United States—the agency's 171 hospitals, nearly 100 outpatient clinics, and nationwide home-town medical services, which together provide care for some 2½ million patients yearly.

JOKL TEXT CITED

A recent text* by Dr. Ernst Jokl, Professor of Physiology, University of Kentucky has been cited by Sir Adolphe Abrahams, O.B.E., M.D., F.R.C.P., in a review which originally appeared in *Coaching Newsletter of the British Amateur Athletic Association*, 9:3, November, 1958. The review is reprinted here with the consent of the Editor.

The author states that his work is "concerned with physiological, psychological and clinical problems of Physical Fitness" and "features the Cohnheim-Welch thesis of adaptation in pathological processes, together with Lord Adrian's thoughts relating to the sensory basis of perception as applied to the interpretation of neurological case histories of athletic champions."

A truly ambitious programme!

For this enterprise, Professor Jokl has all the qualifications. In his youth he was an athlete of Olympic class: he has had great experience in his appointments in South Africa and the United States: he is a musician, a highly cultured student and investigator.

The work incorporates his Essay, for which he was awarded the Buckston Browne Prize and Medal of the Harveian Society of London, a detail to which I am able to add a personal touch, since I had the privilege of acting as assessor on that occasion. He dedicates his book to the memory of that pre-eminent scientist, Sir Charles Sherrington.

Biographical studies provide an interesting background, with the inclusion of such giants as Julius Cohnheim, William Henry Welch, Hughlings Jackson, Armand Duchenne, E. H. Starling and Walter Cannon.

"The Wisdom of the Body" is the leit-motif of Jokl's thesis. Hypertrophy of muscle occurs whenever the load of contractile tissue is increased—hence the runner's diaphragm, the blacksmith's arm. But the heart muscle in high blood pressure, the intestinal muscular layer above an obstruction are also cases of hypertrophy. Only if caused by physiological usage does hypertrophy serve a useful purpose. For "Nature," said Welch, "is neither cruel nor kind but simply obedient to law, and therefore consistent."

Disease and physical disability may serve as strong incentives for the attainment of motor performances, some of them a high order of complexity and of athletic excellence. Harold V. Connelly, World record holder in Hammer throwing, has, through a birth injury, paralysis of the left arm. Some of the best Lawn Tennis players of post-World War II period are diabetics. The famous Mrs. Zaharias won the Women's Open Golf Tournament whilst afflicted at the time with malignant disease. A great Marathon runner had contracted rheumatic fever in childhood, with consequent valvular disease of the heart. Effective physiological adjustment with functional compensation had resulted from athletic training.

Athletic performances of a high standard denote a satisfactory state of physical efficiency, nothing else. A great variety of pathological processes may be present in athletes and need not interfere with their physical activities. The study of the impact of the short-term and long-term physiological adjustments that accompany exercise and training upon such pathological processes as are encountered in seemingly healthy and physically fit subjects, represents the central scientific issue of Sports Medicine.

Jokl has collected 76 cases of death associated with physical exertion (26 of his own observation, 50 reviewed from literature) all subjected to post-mortem examination. In every instance, evidence of pre-existing cardiovascular or pulmonary disease was discovered. There is no such thing as "heart strain" in a *healthy* organ.

In respect to the self-regulatory adjustment concerning periodicity in women and athletic activity, current beliefs and popular taboos stand in contrast to scientifically ascertained facts. During the Olympic Games in Helsinki in 1952, with only four exceptions out of 107 female champions, all had taken part in competitive events during menstruation without experiencing disturbances of any kind. 20 reported that their performances during menstruation were better than usual.

Compared with earlier Olympic Games, increasingly larger numbers of middle-aged and elderly men and women are now taking part in international contests. In the Marathon race in 1948 Richards, at the age of 39, was second. Donald Finlay, it will be recalled, was a great hurdler when 40. Borotra, now over 60, still competes. When he was 47 Tilden beat the 24 year old Donald Budge. Two former world record swimmers, Arne Borg and Johnny Weismuller, swam 100 metres in about 60 secs when 50 years of age. Exercise prolongs life, accelerates growth, and decelerates ageing.

Jokl believes that the traditional Sauna bath is a responsible element in the training of Finnish long distance runners. He cites the 10,000 metres Cross Country race in the 1924 Olympic Games in Paris, when the day was exceptionally hot and the majority of the participants collapsed from heat exhaustion. Nurmi and Ritola took first and second place. I vividly remember the occasion, the dreadful condition of the few who reached the Stadium and the comfortable appearance of the Finns. I have had no experience of the Suana bath, and Jokl may be right in supposing that this had acclimatised them but I think an equally good explanation might be founded on the principle of "the Wisdom of the Body:" that men of superlative physique adjust to *any* vicissitude.

Jokl emphasises that even the most highly specialised athletic performances are built up from a multitude of psysiological elements, many of which must be cultivated by the inclusion in the training curriculum of a systematically selected variety of activities. A common physiological principle is involved in the proven benefits that accrue to runners and hurdlers, throwers and jumpers, from the inclusion in their training of weight lifting.

Again within a wide range of nutritional variants, physical exercise is a more potent modifier of the bodily development of growing youths than are differences in the dietary regime. Though the food intake of champion athletes varies considerably, this factor is not closely correlated with the athlete's physique.

And in respect to rehabilitation; adaptations to physical training give the impression of being designed to improve the ability of the body to deal with situations with which exercise confronts them. Such adaptations take place irrespective of whether the organism is healthy or not.

Professor Ernst Jokl is, in my opinion, the leading authority in the World on this subject. I am glad to take this opportunity to express my gratitude for what, in conversation and correspondence, I myself have learned from him.

"The Clinical Physiology of Physical Fitness and Rehabilitation," by Ernst Jokl, Springfield, Ill.: Charles C. Thomas, 1958, 181 pp. $8.50

SURVEY—Cont'd from P. 46

ently teaching, with 18.6% teaching adapted physical education, and most of the rest teaching in some other phase of physical education.

2. 65.3% are teaching or have taught physical education for an average of 6.2 years.

3. 30.4% are teaching or have taught corrective therapy or adapted physical education in school for an average of 5.2 years. This teaching was done in many States, public schools, colleges, and universities, special schools for the handicapped, etc.

4. 26% have taught in other areas for an average of 6.4 years.

5. 332 or 89.9% affirmed that they were certified corrective therapists, with several others indicating that they were either waiting to take the examination or had taken it and had not as yet been informed of the results. These figures probably have changed considerably since the completion of this survey.

6. 40 or 10.8% are licensed, certified or registered in other areas. 19 of these are State or nationally registered physical therapists.

7. Membership in professional organizations other than the APMR is utterly fantastic. Innumerable professional organizations on the State and national level were listed including teachers associations, physical therapy societies, coaches associations, state chapters of the AAHPER, recreation associations, mental health groups, ad infinitum. The top ten national groups are as follows: AAHPER, 33; AMRDC, 15; National Rehabilitation Association, 13; National Education Association, 10; AART, 10; American College of Sports Medicine, 8; APTA, 7; National Athletic Trainers Association, 7; American Association of University Professors, 4; National Recreation Association, 3.

To summarize, a survey was made in 1957 to determine the present educational and professional status of the members of the Association for Physical and Mental Rehabilitation. The importance of such a survey has been pointed out. The results of the survey have been reported and compared with the 1952 survey.

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ARTIST—Cont'd from P. 49

present in every human being. That among the lame and the halt and the injured a disproportionately large number gain access to these resources with conspicuous facility is a remarkable and well documented conclusion that can be drawn from the history of art, ethics and other fields of human achievement. It seems as if fate which smites the innocent contemplates at times in an effort to atone for the suffering it caused. A new poignancy is thus lent to Robert Browning's sensitive lines:

All I could never be,
All, men ignored in me,
This I was worth to God.

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FITNESS FOR THE AGING

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SOCIAL—Cont'd from P. 55

prediction of the handicapped person's involvement in the rehabilitation process must be based in part, upon previous stress situations. We must re-acquaint ourselves with the symbolic significance of even temporary loss of the sense of personal adequacy that comes of feeding oneself, tying one's own shoes, attending to one's own toilet needs. We must feel deeply the reversion to infant status experienced by the person who has lost bowel and bladder control, the threat to adulthood experienced by the person who believes (perhaps mistakenly) it is no longer possible to be breadwinner, homemaker, parent.

We must constantly bear in mind how either reaction to the frustration of disability, or expression of pre-existing personality trends may impel the patient and family to question and resist goals, procedure, routine of the rehabilitation agency on the approach and contribution helping personnel are endeavoring to provide. A professional attitude assuring the acceptance of the patient and family unit in need, regardless of the indicated response to their behavior, is indispensable in serving the handicapped, as in the case of other groups we serve.

Finally, we must achieve a dynamic understanding of people's attitudes toward social institutions: hospitals and clinics, employment and guidance agencies, education and schools, social services, etc. We must learn to look behind attitudes toward surgery, medication, laboratory tests and advice—all of which may materially affect the entire family unit's ability to employ social resources at their disposal in the rehabilitation process.

In conclusion, I want to express my sense of pride at being a participant in the rehabilitation movement of our country. To have seen the dedicated contribution made by workers of medical and para-medical fields in the care of chronically ill and disabled persons has been a rare privilege. I look forward with anticipation to noteworthy developments in the period ahead—the participation in research which will add new dimensions to our knowledge, the improvement of direct services to the disabled, and the leadership provided to the public at large as it supports ever broadening rehabilitation programs.

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"From Other Journals"

P. J. R. Nichols and C. B. Wynn Parry, "Rehabilitation After Operative Reconstruction of Shoulder for Recurrent Forward Dislocation." *Annals of Physical Medicine*, IV:281-287, November, 1958.

Recurrent dislocation of the shoulder results largely from falls, particularly in sports. Satisfactory treatment requires surgery. After the operation the limb is immobilized for four to six weeks. During immobilization the patients are taught static deltoid contractions and movements of the wrist and fingers are encouraged. After removal of the strapping the arm is placed in a sling. Active shoulder movements are encouraged, but external rotation is restricted. After six weeks, free movements of the shoulder within the painless range are begun. These progress in variety, duration, and range, but no forced, assisted, or passive exercises are allowed. Games such as quoits and darts, which entail abduction and rotation from full internal rotation to the neutral position are introduced. Archery and swimming with the "dog paddle" or breast stroke are undertaken during the ninth week. Weight lifting is then introduced for those needing increased strength. When patiets are discharged, they are advised to avoid violent sports for an additional three months and to continue their exercises.

J. N. Morris and Margaret D. Crawford, "Coronary Heart Disease and Physical Activity of Work." *British Medical Journal*, 51:11:1485-1496, December 20, 1958.

A study was undertaken to determine the frequency, in relation of occupation, of ischaemic myocardial fibrosis in men dying from causes other than coronary heart disease. It was found that there was a lower prevalence of ischaemic mvocardial fibrosis among men who had been in physically active and heavy jobs than among those in sedentary and light jobs. There is no information on the relationship between physical exertion in leisure and the incidence of coronary heart disease, but regular physical exercise may be one of the "ways of life" that promote health in middle age.

"The International Oceanographic Foundation Sea Secrets." Published at The Marine Laboratory, University of Miami, Florida.

"Hot Water" is the term applied by swimmers to bodies of water where they experience an immediate sharp stinging sensation. It is prevalent along the Florida coast from May through September. The results of the contact are similar to those resulting from contact with the Portuguese Man 'o War, certain jellyfish, and other large coelenterata. The irritation may disappear in a few minutes, or a weal which later becomes postulous may appear. It is believed that the stings are caused by "sea lice," possibly *Millepora alcicornis*. The irritation is different from the acute form of dermatitis known as "sea bather's eruption."

Henry J. Montoye, William Mack, and John Cook, "The Prediction of Performance in the NCAA Cross-Country Run from the Brachial Sphymogram." Presented at the Research Section, 44th Annual Convention Midwest Association for Health, Physical Education and Recreation, Milwaukee, Wisconsin, April 17, 1958.

A Cameron Cardiorespirograph was used to record pulse waves (sphygmograms) from 48 competitors in an NCAA cross country championship meet. When the data were statistically analyzed it was found that the pulse rate is the only item of the pulse wave as measured by this instrument which is of value in predicting cross country running time.

A. Holmgren and H. Linderholm, "Oxygen and Carbon Dioxide Tensions of Arterial Blood during Heavy and Exhaustive Exercise," *Acta Physiologica Scandinavica*, 44:203-215, 1958.

Fourteen bicycle racers were studied to determine the oxygen tension and carbon dioxide tensions of arterial blood during work on a bicycle ergometer. Heavy work was performed in a relative steady state; exhaustive work at a non-steady state. During heavy work the mean oxygen tension of arterial blood decreased significantly as compared with the values at rest. During exhaustive work a significant further decrease took place. Since arterial blood gas varies with relative work load, measurements during exercise should be related to the relative intensity of the work if different investigations are to be comparable. Carbon dioxide tension also tended to decrease during exhaustive work. This is not in accordance with the idea that CO2 is the main stimulus for ventilation during heavy and exhaustive work. Apparently the O^2 exchange by the lung has a higher resistance to overcome than does the CO^2 exchange. The diffusing capacity of the normal lung usually seems larger than necessary for maximal O^2 uptake; the main O^2 tension gradient occurs in the exchange between alveolar air and blood. With increasing intensity of work the circulation reaches its maximal capacity (maximal pulse frequency) before a decrease in oxygen saturation of significance for O^2 transport is observed. This makes it justifiable to regard circulation, and not lung function, as the main limiting factor for O^2 transport. The increase in exercise tolerance during the breathing of O^2 may be explained by complete O^2 saturation of the arterial blood and an increased amount of O^2 physically dissolved in the blood.

Unless noted otherwise, all abstracts have been prepared by Philip J. Rasch, Ph.D.

Chapter Activities

California Chapter

The chapter participated in a tri-organizational meeting with local chapters of AART and AMRDC at the Sepulveda VAH on Feb. 7 to initiate planning for the national conference to be held in the Los Angeles area in 1960. Joseph Harris of AMRDC will act as conference chairman, and the executive committee will consist of Burr S. Zachary, APMR, James N. Lentz, AART, and Aldo S. Romiti, AMRDC. General program chairman will be Dr. Karl H. Haase, Chief, PM&RS, Wadsworth VAH with Murray Levitta, AMRDC, Richard Fowler, APMR and Kenneth Nelson, AART acting as Sectional Chairmen. Dr. Carl Haven Young of UCLA will assist Dr. Haase on the general program. Other chapter members who will serve on conference committees are Bernard Weber, chairman, exhibits committee; Richard Barr, chairman, social functions; Rudy Jahn, official program; Ernest Saenz, registration, Fred O'Banion, hospitality and Thomas Meyer, banquet.

A Tri-Organizational State Conference is scheduled for May 22-23 at the California State Polytechnic College in San Luis Obispo.

The California chapter was represented at the State conference of the American Association for Health, Physical Education and Recreation at the Statler-Hilton Hotel, Los Angeles, Mar. 21. Dr. John H. Aldes addressed the student section on "Therapy Careers for Physical Education Majors" and showed a color film on "Training and Employment of the Physically Handicapped." Dr. Carl Haven Young, First Vice President of APMR, moderated a panel on "Adapted and Corrective Therapy" which included Burr S. Zachary, Chief CT, Brentwood VAH; Clifford H. Loose, Chief CT, California Rehabilitation Center; Meryl Adams of the corrective physical education staff of the Los Angeles City Schools; Carl Alsberg, CT, VAH, Sepulveda; Rudy Jahn, Chief CT, VAH, Long Beach; and Richard Fowler, Chief CT, VAH, Wadsworth.

EASTERN STATES CHAPTER

The Eastern States Chapter held a joint conference with the New York chapters of the AART and AMRDC at the Belmont-Plaza Hotel, New York on March 20th. Leo Berner, Chief, Corrective Therapy at the Bronx Veterans Administration Hospital and Ben Levine, M.A.T., at Brooklyn Jewish Chronic Disease Hospital acted as co-chairmen of the clinical session.

Dr. Madge C. L. McGuiness, secretary of the New York Society of Physical Medicine and Rehabilitation, acting as moderator for the meeting, spoke on "History of Physical Medicine and Rehabilitation." Dr. Peter Karpovich, Springfield College, presented a paper and demonstration on "The Electro-goniometer and Its Application for Measuring Movement in Joints." This device which has been developed for use in hospitals will assist the doctor and therapist to obtain an accurate reading of a range of motion in joints. This accuracy is necessary when thinking in terms of measurement of motion of joints. The Electro-goniometer was developed by Dr. Karpovich and his staff and is already in use by several hospitals.

A business meeting of the APMR and AART sections followed the close of the clinical session.

L. to R. Ben Levine, Dr. Peter V. Karpovich, Dr. Madge C. L. McGuiness and Leo Berner.

Book Reviews

"Directory of Catholic Facilities for Exceptional Children in The United States." (Washington 6, D.C.: National Catholic Association, 1958. 248 pp. Paper.)

This directory is unusually complete. Schools, hospitals, clinics, bibliographies, instructional materials, colleges, teaching orders, and agencies are among the information listed. So far as can be made out from this directory, no Catholic colleges offer courses in corrective therapy, although there are a number whose departments of physical education offer courses in "allied fields," and the Association for Physical and Mental Rehabiiltation is included in the "Directory of Agencies."

The prospective purchaser of this booklet should be warned that the word "Exceptional" in the title actually means handicapped. This is confusing, since to most of us the term implies outstanding. It is, of course, the outstanding child upon whom the future of our country depends; one wonders what Catholic facilities are available to assist these children to develop their potentialities.

PJR

"Physiology of Exercise," by Laurence E. Morehouse and Augustus T. Miller, Jr., Third Edition. (St. Louis: The C. V. Mosby Company, 1959. 349 pp. $4.75)

This new edition of a standard text has been so extensively revised that it might be reviewed as though it were a new book. Several of the older chapters have been condensed, combined, or omitted entirely. New chapters, such as Origin of Human Movement, Physiological Mechanisms in Movement Behavior, and Connective Tissue, have been added. Many new illustrations have been incorporated into the text.

As this reviewer has followed the various editions of this book through the years an unmistakable trend has become evident: The authors' emphasis has steadily shifted from the presentation of the facts to the understanding of the causes of the phenomena of exercise. Nor have they stopped there: they have increasingly endeavored to relate these phenomena to man's behavior and to discuss them from the point of their *meaning*. This is particularly evident in the chapter on Origin of Human Movement, whose content is drawn largely from psychological, psychiatric, and philosophical journals. This third edition also shows an increased interest in human form, perhaps reflecting the work in kinesiology performed by the senior author during the last few years.

This holistic philosophy would appear to this reviewer to be "the wave of the future" in scientific textbook writing. The authors of *Physiology of Exercise* are to be congratulated on having assumed the leadership in their own special field.

PJR

"Kinesiology," by Ellen Neall Duvall. (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1959. $5.75. 2929 pp.)

The major portion of this manual consists of a discussion of the kinesiological action of the principal muscles. In each case the nerve supply, location, and opinion of various writers concerning the action of the muscle is given. Illustrations by Helen Lorraine are plentiful and excellent. They add much to the text. The introductory chapters are extremely brief and have some curious omissions. Thus, reciprocal innervation is discussed but co-contraction, which appears to be the rule rather than the exception, is not. The ankle joint is described as a second class lever, with no mention of Kranz's dictum that no levers of this class are to be found in the body. The last chapter gives sample analyses of a few moments in order to illustrate how this is done. Each section is followed by a bibliography, and the book is indexed.

Although Kinesiology is presented as a part of the Prentice-Hall Physical Education Series, it is not complete enough to serve as a text for a college course for physical educators and could not be used as a replacement for Stone, Morehouse and Cooper, or Wells. It would make an excellent reference manual for a therapist to keep on his desk as a quick and convenient way of refreshing his memory and would appear likely to supercede Kranz's Kinesiology Manual for that purpose.

PJR

"Third Annual Report of the Joint Commission on Mental Illness and Health." (Cambridge: Joint Commission on Mental Illness and Health, December 31, 1958. 27 pp. Paper.)

This is the Third Annual Report of a study of mental health made by a group to whom the Association for Physical and Mental Rehabilitation makes a financial grant. The director points out the semantic difficulties inherent in the use of the term "mental health" and the need for clarification of the subject. He reports that mental hospitals tend to be large, overcrowded, under-staffed, and to have many long term patients. Perhaps ten per cent of the population needs treatment for mental illness. The use of tranquilizers is an obvious trend in the treatment of such illnesses and has stimulated interest in the study of the chemistry of insanity. Study of the social structure of hospitals and of the psychological structure of psychoses are also developing fields. The cost of the operation of state and federal mental hospitals is estimated at $1,700,000,000 a year; total costs are perhaps as high as $2,900,000,000 a year. His final sentence is revealing if not precisely consoling: "Thus, the picture is one of great activity, some of it effective . . . "

PJR

"Rehabilitation After Illness and Accident." Edited by Thomas M. Ling and C. J. S. O'Malley (Baltimore, Maryland: The Williams and Wilkins Company, 1958. 119 pp. $3.50)

The social factors in rehabilitation are inescapable. This follows if the rehabilitation concept is firmly rooted in the responsibility of the medical profession and society for the work, play, and life of the disabled (as yet inadequately emphasized in the medical schools), and the creation of a motivational climate conducive to the patient's assuming an active role in his restoration. Some direct speaking to this philosophy is to be found in the brief essays of this British-authored text. " . . . a rehabilitation service is not a salvage service, something that passes for a rehabilitation service in many countries. This system allows the patient because of his medical and physical disabilities to become practically unemployable, and then sends him to be salvaged by a rehabiiitation centre. The rehabilitation of a disabled patient can be accomplished only by having a continuous process influencing the patient from the time he becomes sick or injured until he is back at work . . . living an independent existence in a normal community . . . an unenlightened Centre produced worse results than having no Centre at all. Bad rehabilitation is worse than no rehabilitation."

A well written picture of the problems of rehabilitation in the welfare state emerges. The excellent sections by O'Malley and Ling are alone worth the price of admission. There are sections on emotional factors, general medicine, thoracic disease, cerebral surgery and illness, return to work, general and orthopedic surgery, occupational therapy, and social factors. These sections are intended only as an introduction to the principles and problems of rehabilitation, uncluttered by references, and suitable for medical or paramedical workers.

On page 101, some interesting comparisons are made between the physiotherapist ("wishes to do things to patients") and the physical educationalist and remedial gymnast ("wishes to do things with patients") and the implication this has for utilization of each at various stages in rehabilitation.

D.J.S.

An Inventory of Social and Economic Research in Health. Seventh Edition. (New York: Health Information Foundation, n. d. 492 pp. Paper.)

This is the 1958 edition of a very useful annual guide. The book is divided into sections dealing wth research concerned with health levels, mental health, sociological factors, health facilities, health services, personnel, and economic factors. Some 800 entries are included, approximately four times the number listed in the first (1952) edition.

PJR

BOOKS RECEIVED

"Tratamiento De Pacientes Hemiplejicos." (New York: State Dept. of Health, 1958. 37 pp. paper, $.50)

A monograph on the management of the hemiplegic patient with text in Spanish. Available from the International Society for the Welfare of Cripples, 701 First Avenue, New York 17, N. Y.

Education Directory 1958. 1958. Part 1. Federal Government and States, by Mabel E. Rogers. ((Washington, D.C.: United States Government Printing Office, 1959. 76 pp. Paper. 45c).

A listing of the education officials in the Office of Education, the principal State and Territorial school officers, the executive officers of the State and Territorial library extension agencies, and the principal education officers of the Bureau of Indian Affairs.

Statistical Summary of State School Systems, 1955-56, by Samuel Schloss and Carol Joy Hobson. (Washington, D.C.: Government Printing Office, n.d. 9 pp. Paper.)

Circular No. 543 of the U. S. Department of Health, Education, and Welfare, comprising an advance report based on Chapter 2 of the Biennial Survey of Education in the United States, 1954-56.

News and Comments

TO TEST MASS CANCER DETECTION

A method for mass screening of population groups for incipient lung cancer will be tested by Veterans Administration and the American Cancer Society. The technique involves examination of sputum specimens, coughed up from the lungs, for abnormal lung cells that indicate early cancerous or precancerous changes in the lung tissue.

In the joint VA-American Cancer Society study just getting underway, about 8,500 residents of six VA domiciliary homes will be screened twice a year by use of the sputum cell analysis method, plus chest x-ray films.

In addition to testing the value of the technique as a diagnostic tool, the study will enable VA doctors to determine the extent of correlation between history of smoking, symptoms of bronchial and lung irritations and infections, and development of lung cancer in residents of the homes. The sputum cell technique is a quick and simple process but requires expert knowledge on the part of the physician making the analysis.

The only special equipment used is a device called a nebulizer that sometimes may be needed to aid in obtaining sputum specimens. It vaporizes a harmless solution containing salt and glycerin that is inhaled, collects in the air tubes of the lungs, and helps bring up precancerous lung cells.

The six participating VA domiciliary homes are located at Bay Pines, Fla.; Biloxi, Miss.; Dayton, Ohio; Los Angeles; Martinsburg, West Va., and Wood (Milwaukee), Wis.

Dr. Lyndon Lee, who coordinates the study for VA in Washington, D. C., said findings of the project are not expected to be available for at least two years. Residents of the homes for whom the lung cell test is positive will receive intensive study by additional diagnostic procedures, and medical treatment as needed, he said. "Evidence is available that reaction of respiratory tissue leading to cancer may be present for some time before evidence of lung cancer can be shown on x-ray films and before clinical symptoms of the disease appear," Dr. Lee said. "We hope the lung cell test may help us diagnose this disease at an early and curable stage."

Specimens obtained from residents of the domiciliaries in the study will be sent to four cytology centers, specializing in the study of cells, which will make the determination of presence or absence of abnormal calls and send the test results to the VA domiciliaries.

Directors of these centers are Dr. George N. Papanicolau of Cornell University Medical College in New York City; Dr. Irena Koprowska, associate professor of pathology at Hahnemann Medical College in Philadelphia; Dr. William O. Umiker, pathologist of the VA center at Ann Arbor, Mich., and Dr. John R. McDonald, pathologist of Harper Hospital in Detroit, Mich. X-ray films made in the study will be screened by a radiology center directed by Dr. Bernard Kordan, assistant clinical professor of radiology at the University of Southern California School of Medicine in Los Angeles. Statistics for the study will be compiled in a statistics center in the Division of Chronic Diseases at Johns Hopkins School of Hygiene and Public Health in Baltimore, under direction of Dr. Abraham M. Lilienfeld.

NEW CHIEF, MEDICAL SERVICE APPOINTED BY VA

Appointment of Dr. John M. Rumball, chief of medical service at the Veterans Administration hospital in Coral Gables, Fla., as director of medical service for the agency in Washington, D. C., has been announced by VA.

Dr. Rumball will be transferred to VA Central Office early in April. He also has accepted an appointment as clinical associate professor of medicine at Georgetown University School of Medicine in Washington, D. C. A diplomate of the American Board of Internal Medicine and a World War II veteran, Dr. Rumball presently is associate professor of medicine at the University of Miami School of Medicine.

NP PATIENTS HELP EACH OTHER IN HOSPITAL PROGRAM

A unique "big-brother" system in being used by hospitalized veterans in their fight against mental illness, the Veterans Administration has reported. Recovering patients at the VA mental hospital in Salisbury, N. C., have formed a society known as "The Helping Hand," in which each member holds himself responsible for more seriously ill patients in hospital activities, VA said.

Dr. Samuel J. Muirhead, manager of the hospital, said the scheme has proved an effective form of help for both its members and non-members. More improved patients can help less fortunate patients towards recovery in ways that the hospital staff cannot, he said, since patients ofttimes notice improvement in the condition of their companions, and thus become aware that their own improvement is possible.

The society is an exclusive group with membership restricted to patients approved by its screening committee and elected by unanimous vote, Dr. Muirhead said.

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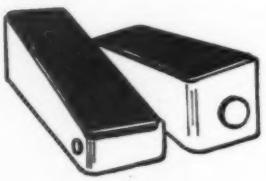

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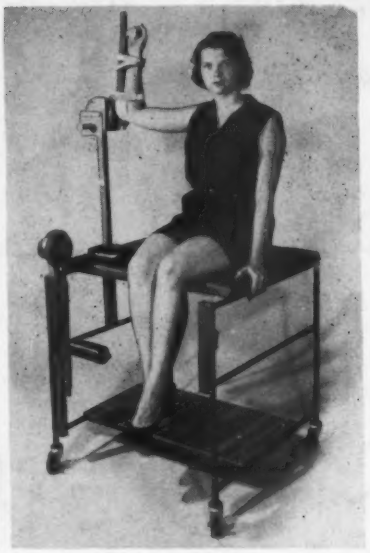

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